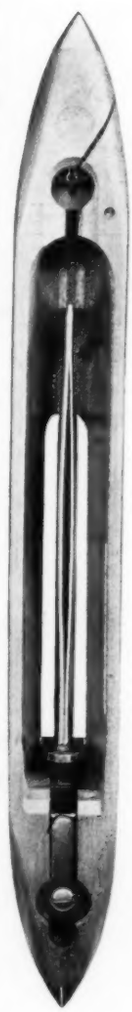
COTTON

JULY, 1913

USE SHAMBOW SHUTTLES

They Have the Best Hand Threading Device

Any Style Spindle Fitted to Accommodate Your Bobbins Perfectly. They Outwear Other Shuttles because They Are Built Right from Beginning to End.



A SUGGESTION

SEND US SAMPLE SHUTTLE WITH FULL BOBBIN AND ORDER FOR TRIAL LOT. YOU WILL GET BETTER SHUTTLES AND BETTER SERVICE.

SHAMBOW SHUTTLE COMPANY
WOONSOCKET, RHODE ISLAND

AUTOMATIC LOOM SHUTTLE. The most perfect hand threader, the high degree of uniformity and accuracy in workmanship, the properly seasoned selected timber fashioned into a rugged shuttle make the Shambow Shuttle the most efficient for automatic looms of the shuttle changing type.

SHUTTLE CONTAINING SHAMBOW MARBLE SPINDLE. Corners at spindle end of shuttle eliminated. A great bobbin saver; stays level longest. Patent staple prevents splitting of top of shuttle.

Alphabetical and Classified Index to Advertisements Following Reading Pages

NORTHROP LOOMS

TRADE MARK REGISTERED

EARN MORE WAGES FOR THE WEAVER
LARGER DIVIDENDS FOR THE MILL

DRAPER COMPANY
HOPEDALE MASS.

J. D. CLOUDMAN, SOUTHERN AGENT,
40 SOUTH FORSYTH ST., ATLANTA, GA.

DUTCHER TEMPLES

Trade Mark Reg. U. S. Pat. Off.

DRAPER COMPANY

SOLE MANUFACTURERS

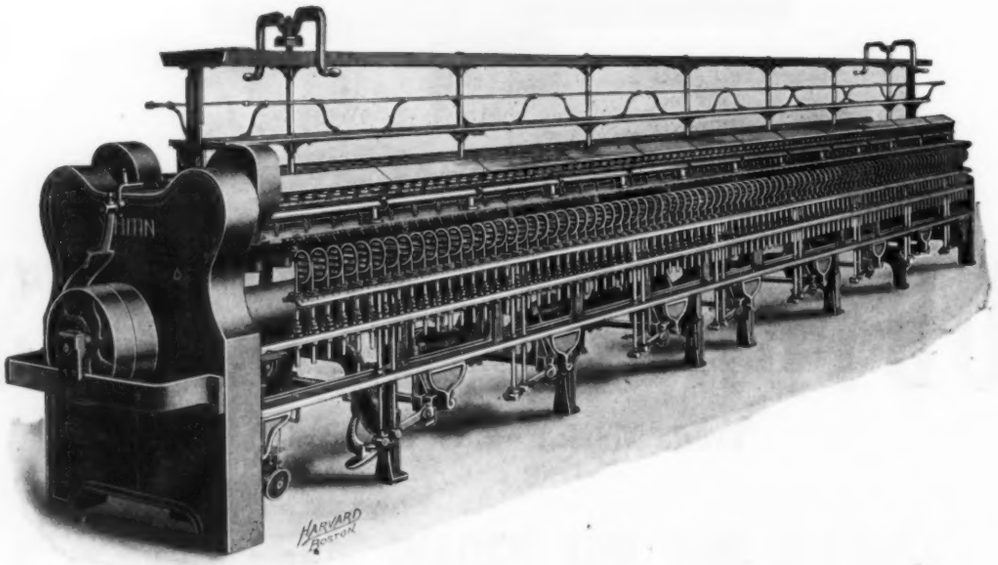
HOPEDALE MASS.

The Whitin Machine Works

Whitinsville, Mass.

BUILDERS OF

COTTON MILL MACHINERY



Ring Spinning Frame

Manufacturers of Carding, Spinning and Weaving Machinery for Cotton Mills.

Southern Agent—STUART W. CRAMER,

Charlotte, N. C.

MASON MACHINE WORKS

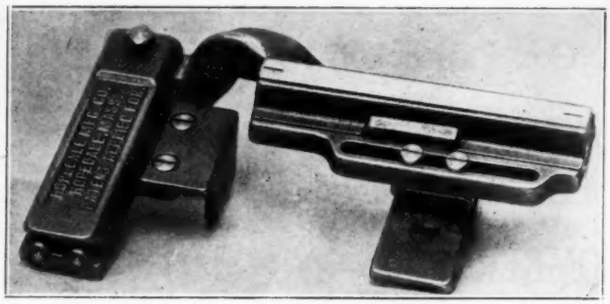
SUPERIOR

LOOM CRANKS

FOR REPAIRS OF
LOOMS OF OTHER
SHOPS

CARDS DRAWING SPINNING LOOMS MULES

TAUNTON MASS. CHARLOTTE N. C.



We Announce

that we are now prepared to accept orders for

Improved Temples, Temple Rolls, Drop Wires and a New Warp Stop Motion

When you are in the market for any of the above it will pay you to communicate with us.

Hopedale Manufacturing Co.
HOPEDALE. MASS.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT

JOS. T. PEARSON 1815-25 E. BOSTON AVE. KENSINGTON PHILA.

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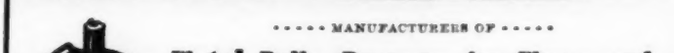
R. W. THURSTON, Proprietor



MANUFACTURERS OF

Fluted Rolls, Pressers for Flyers and General Machinery

Specialties made of Renecking, Refluting, Filing and Honing of all kinds of Rolls

Speeder Flyers repaired and fitted with any style presser.

Spindles Straightened, Restepped and Retopped.

Cor. Mulberry and Division Sts., Fall River, Mass.

In A Union of Specialists There Is Strength

PICKERS AND REVOLVING FLAT CARDS
Potter & Johnston Machine Co., Pawtucket, R. I.

DRAWING AND ROVING FRAMES
Woonsocket Machine & Press Co., Woonsocket, R. I.

SPINNING AND TWISTING FRAMES
Fales & Jenks Machine Co., Pawtucket, R. I.

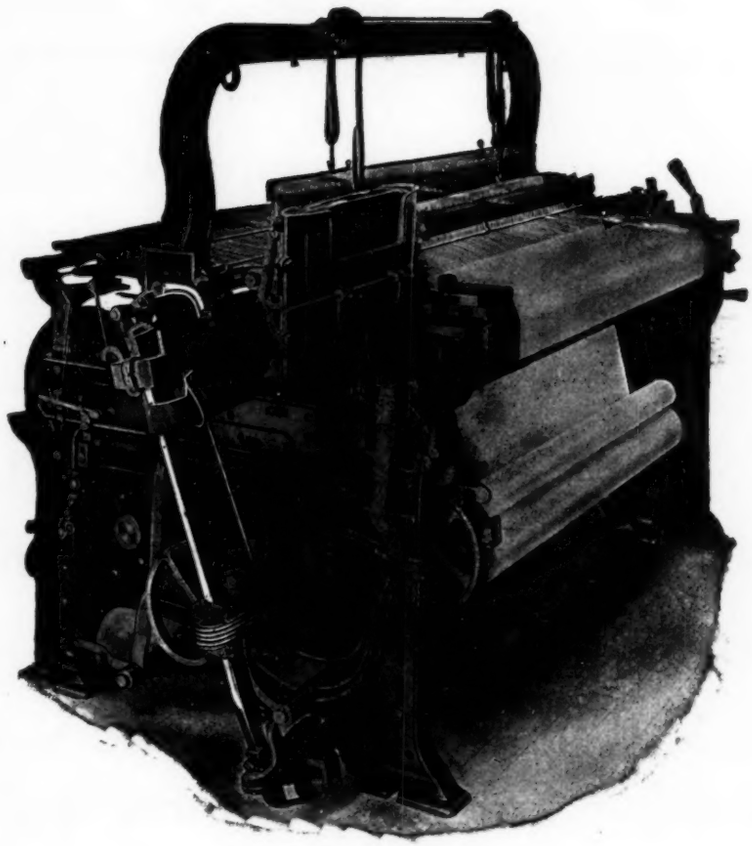
SPOOLERS AND REELS
Easton & Burnham Machine Co., Pawtucket, R. I.

BEAMERS AND WARPERS
T. C. Entwistle Co., Lowell, Mass.

NASMITH COMBERS
John Hetherington & Sons, Manchester, England

J. H. MAYES, Southern Representative
1112 Independence Building, Charlotte, North Carolina
Wm. V. THRELFALL, Northern Representative
Marshall Building, Boston, Massachusetts

"IDEAL" AUTOMATIC LOOM



No other loom can equal it in production, quality of cloth, freedom from breakages and repairs and ability to us cope or bobbin filling.

THE STAFFORD COMPANY

READVILLE, MASS.

FRED H. WHITE, Southern Agent, CHARLOTTE, N. C.

DOBBIES

One of the first requisites in the make up of a good loom weaving fancy fabrics is a good Dobby.

The Crompton & Knowles Loom Works build a complete line of Dobbies accepted everywhere as the standard of excellence.

We will be pleased to send you our new Dobby Catalogue, showing some of the types we make.

Looms for Every Known Fabric

Crompton & Knowles Loom Works

WORCESTER, MASS.

PROVIDENCE, R. I. PHILADELPHIA, PA.

WHITIN RINGS.

LIGHTEST RUNNING
MOST DURABLE, and
MOST ECONOMICAL.

Have you seen our
1910 Diamond Finish

WHITINSVILLE SPINNING RING CO. Whitinsville, Mass. U.S.A.

HOTEL CUMBERLAND

NEW YORK

BROADWAY AT 54th STREET

Near 50th St. Subway Station and 53d St. Elevated

"Broadway" Cars from Grand Central Depot pass the door
Also 7th Avenue Cars from Pennsylvania Station

NEW AND FIREPROOF

Best Hotel Accommodations in New York at Reasonable Rates
$2.50 WITH BATH, AND UP
Suites $4.00, and Up
All Hardwood Floors and Oriental Rugs
Ten minutes' walk to 30 Theatres

Excellent Restaurant. Prices moderate
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HAYRRY P. STIMSON, Formerly with Hotel Imperial

Only New York Hotel window-screened throughout

SPECIAL SUMMER RATES FOR SOUTHERN PEOPLE

A Lace and Edging Machine That Runs Quietly at High Speed

Also adapted to manufacture of fancy knit goods, coats, sweaters, shawls, nubias, golf vests and their trimmings.

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MANUFACTURER OF TEXTILE AND SPECIAL MACHINERY

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Makers of Looms for

Plain and Fancy Weaving

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Southern Agent, O. A. Robbins, - - Charlotte, N. C.

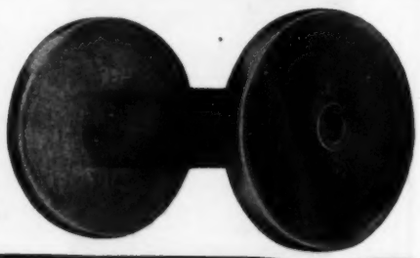
STEWART & SONS

MANUFACTURERS

LOOM REEDS

Jasper and Orleans Sts. PHILADELPHIA, PA

You say your loss from broken spools is but a mere trifle



Did you ever attempt to prove that statement? Do it, for your own satisfaction. The magnitude of this waste is not readily apparent in the stress of other matters, but if you will apply yourself to the matter you'll see it is a big item on the wrong side of your ledger. Our METAL PROTECTED SPOOLS will save practically all this loss for you. They rarely ever break or separate. When you consider that it's the full spool which breaks, you'll see why our METAL PROTECTED Spools save you big money. The metal does not rust or stain the yarn. It protects both the outside and inside of spool. We are making a special trial offer to mills who have never used our spool. Write for this offer and sample spools at once. ADDRESS ☞

LESTERSHIRE SPOOL AND MANUFACTURING CO.

LESTERSHIRE, NEW YORK

Reels for Cotton

WOOLENS AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers

Lindsay, Hyde & Co.,

2124 to 2130 E. York Street

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Dary Ring Traveler Co.

MANUFACTURERS OF

HIGH GRADE

Spinning and Twisting Travelers

Taunton, Massachusetts

THIS IS TO KEEP YOU INFORMED OF OUR ADDRESS

Our Baskets need no advertising: Their superiority is known to all. They last for years after our address has been forgotten.

All sizes and shapes. For all purposes.

Our registered Trade Mark distinguishes from imitations.

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MAKER OF

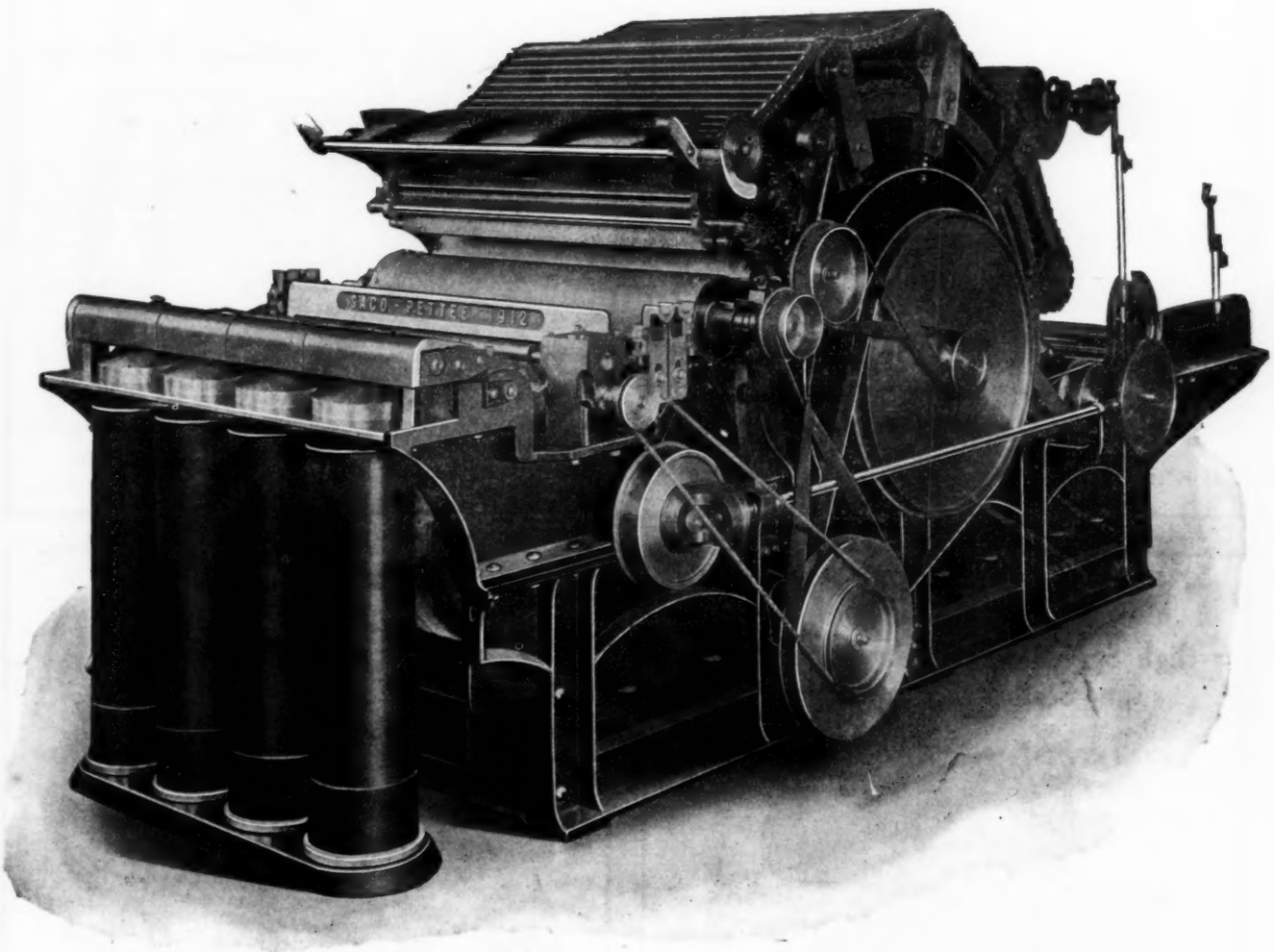
Fulling Machines, Washing Machines, Drying Form Boards

OF EVERY VARIETY

For Ladies', Men's and Children's Goods

SACO-LOWELL SHOPS

COMPLETE TEXTILE EQUIPMENTS

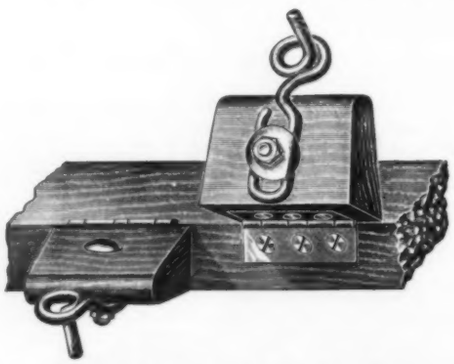


4-COILER WASTE CARD

COMPLETE WASTE REWORKING PLANTS

ROGERS W. DAVIS Southern Agent CHARLOTTE, N. C.

The Palmer Adjustable Thread Guide



For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

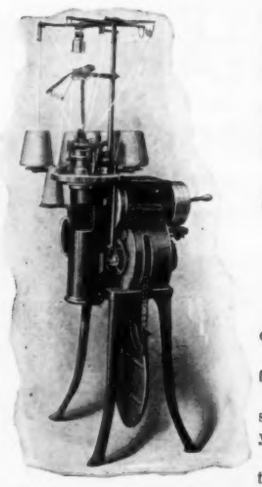
Middletown, - - Connecticut.

A New System of Machinery For Producing Seamless Hosiery

Scott & Williams Model B

INCORPORATED

Replacing Former Model B



Five Yarn Changes.

Sectional slackening prior to the heavy yarn changes, thereby preventing cutting and waste.

Fabric also slackened where high splicing yarn is inserted, thus insuring narrow ankle and foot.

Scott & Williams

INCORPORATED

Model F

The most comprehensive machine ever offered to the trade.

Makes women's hose with integral welt—no sewing necessary.

Or will make women's hose with selvage top, using any kind of yarn from silk to carded cotton.

Makes half-hose without a transfer.

All dropped from the machine—looping alone required.

Anti-run-back course preventing ravelling from garter tears and other causes.

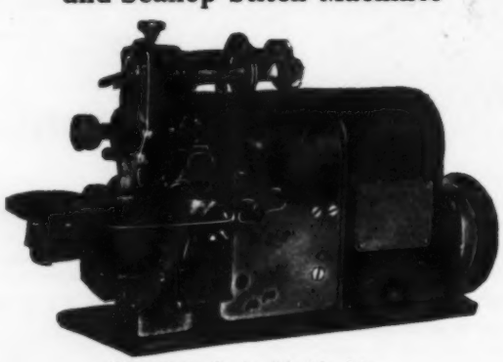
This machine may also be used for making string work, or half hose transferred in the old fashioned way.

Scott & Williams, Inc., 88 Pearl St., Boston, Mass.

Philadelphia Utica

THE MERROW

High Speed Overseaming, Overedging and Scallop Stitch Machines



Our New Style 60 Machine

For Trimming and Overseaming in one operation produces the strongest seam with the greatest economy.

USE STYLE 60S for welting Stockings, blind stitch.
USE STYLE 60H for hemming bottoms of Underwear.
USE STYLE 17 or 22 for Bed Blankets.
STYLE 18 is for Horse Blankets.

SEND FOR SAMPLES AND CATALOGUE

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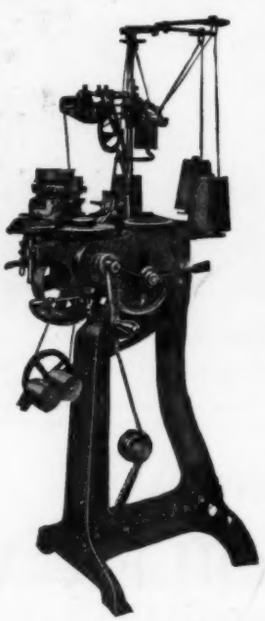
28 Laurel Street, HARTFORD, CONN.

427 Broadway, New York, 237 Market St., Chicago
Knickerbocker Bld'g, 6th and Arch Sts., Philadelphia, Pa.



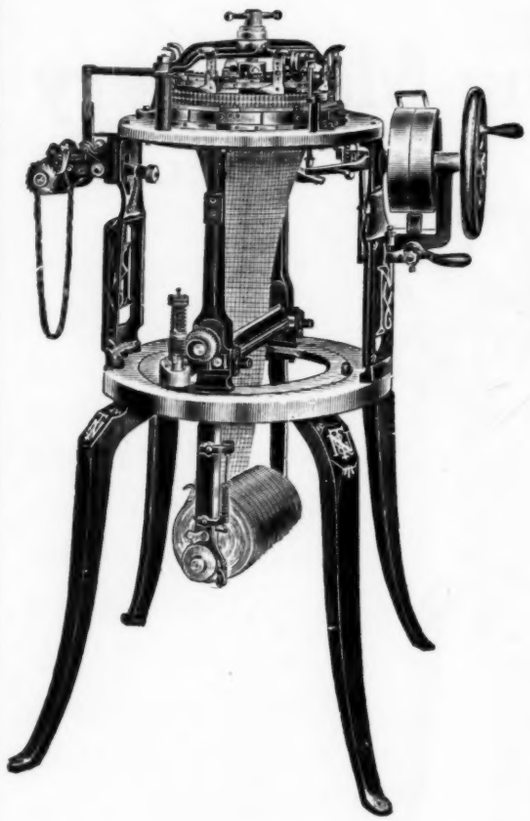
Quality AND Economy

INVINCIBLE

JENCKES KNITTING MACHINE COMPANY

PAWTUCKET, :: :: RHODE ISLAND

Philadelphia Show Rooms, 1211-1217 Filbert Street



NYE & TREDICK CO.

MANUFACTURERS OF

Circular Rib

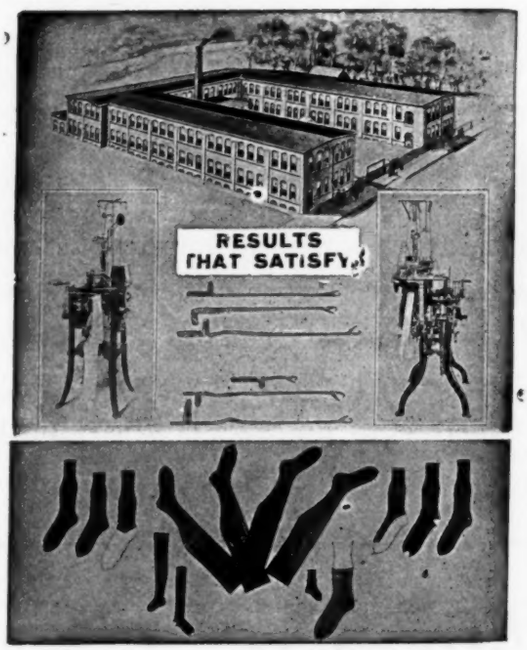
Knitting Machinery

FOR

Underwear and Hosiery

Office and Show Rooms
718-720 Cherry St.,
PHILADELPHIA, PA.

Quality of Product Secures for Our Customers



ASK THOSE WHO KNOW

Acme Knitting Machine & Needle Co.

Franklin, N. H.

Bourse Bldg., Philadelphia, Pa.

STAFFORD & HOLT

Builders of
CIRCULAR

Rib Knitting Machinery

For Knitting the Latest Style Fabrics.

FOR

Underwear, Sweaters Toques, Cardigan Jackets, Borders, Etc.

Also Builders of

Napping Machines

The Stafford and Holt Pineapple Stitch Machine is the Latest

Write for Descriptive Circular

Little Falls, New York

Circular Rib Knitting Machinery

PRODUCTS

Underwear, Sweaters, Cuffs with Cut Welt, Selvage, or French Welt, Mantles, Collarettes, Toques, Golf Caps, Hosiery Tops, Skirts, Borders, Corset Covers, Button Stays, Mittens, Bandages.

FEATURES

Rectangular Slots, Hardened at Bottom, Sectional Caps and Cam Rings, Hardening and Ground surfaces, Sensitive Take-Ups, Two Speed Drive, Dogless Attachment, Positive Pattern Mechanism, Needle Guard and Protector, Automatic Stop Motions, Electric Cloth Cutters.

MANAGER

It is good to make a showing on first cost, but a knitting machine is not like a stock table. The knitting machine manipulates every inch of your yarn making first-class fabric, indifferent fabric or waste. This yarn costs **256 times** as much as the best machine, if the latter lasts fifteen years. Buy cheap stock tables if you must. They can't hurt your goods. But buy only the best knitting machinery.

Wildman Mfg. Co.

Established 1889 **NORRISTOWN, PENN.**

Acme Hosiery and Textile Binder No. 30

A simple, inexpensive machine for Attaching Tickets on Hosiery Underwear, etc.

Uses a pointed staple. Cannot injure the finest Silk Hose. Is portable. Can be set aside when not in use. Is operated by foot power and has a patented WORK-HOLDING DEVICE, carrying one dozen or more pairs of Hose, keeping them in perfect alignment and presenting the tops in position to receive the tickets at least twenty-five per cent quicker than by any other method now in use.

For particulars and the address of the nearest agency apply to the manufacturers,

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A new modern hotel located at the hub of New York's greatest business, representing a Five Million Dollar investment on the sight of the former Hoffman House, OVERLOOKING MADISON SQUARE.

BROADWAY, 24th STREET, FIFTH AVENUE
THE ACME OF ARCHITECTURAL PERFECTION

Accommodations for 1,000, offering maximum luxury and comfort at much lower rates than offered in any other Hotel in America, consistent with highest class service.

A Good Room at.....$1.50 Per Day
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Handsome Apartments of any number of rooms at proportionate rates.

The Management is a guarantee of the highest refinement and protection to ladies and families.

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NEW BANCROFT HOTEL

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Cars pass the door to all parts of the City Near War, State, Navy and Treasury Depts.

A first-class modern hotel

Moderate rates.

Rooms single or en suite, with or without private bath.

The service and cuisine of the Hotel Bancroft combine every convenience known to hotel management.

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You want to get the best that your money will buy.

That Means Felton's Brushes

Mill brushes of all kinds—High in quality—Low in price.

Send for the book "Felton's Mill Brushes."

S. A. Felton & Son Co.
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When once tried, are *always* used, because they are far superior in every respect to all others on the market.

Our *Trucks* also are unequaled, for style and durability.

Drop line for Caster Catalog and Truck Bulletins.

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Sole Agents in the United States and Canada for Platto Bros. & Co. Cotton Machinery.
COMPLETE MILL EQUIPMENT
Patent Barchaul Machinery for Making Yarn from Cotton Waste, Etc.

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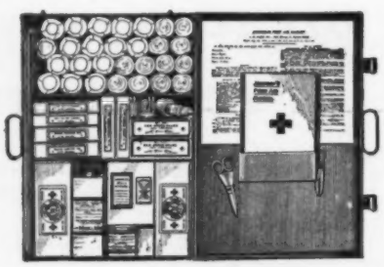
Wherever there is liability of injury to an employe, common humanity requires that first-aid-to-injured material be available. Johnson's First Aid Cabinet not only provides this humane necessity but has proven an economical equipment to thousands of employers and industries.

Johnson's First Aid Cabinet.



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Installed in mines, mills and shops to a greater extent than all others combined.

Sold by the drug trade and mill supply concerns. Illustrated and descriptive literature on request.

Johnson & Johnson, Dept. 7 New Brunswick, N. J.

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CLEVELAND, BUFFALO,
NIAGARA FALLS,
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ST. IGNACE
THE CHARMS OF SUMMER SEAS
Spend your vacation on the Great Lakes, the most economical and enjoyable outing in America.
Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; daily service between Toledo, Cleveland and Put-in-Bay.
A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every Monday up-bound, Saturday down-bound.—Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.
Send 2 cent stamp for Illustrated Pamphlet and Great Lakes Map
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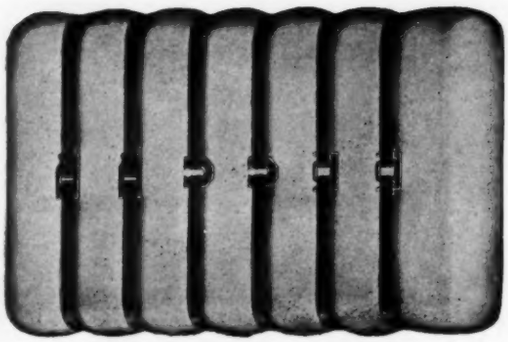
Philip H. McMillan, Pres.
A. A. Schantz, Vice-Pres. and Gen'l Mgr.
Detroit & Cleveland Nav. Co.
D&C LAKE LINES



Bale Shows Our Three Styles of Buckles.

Acme Steel Goods Co.

Main Office and Works
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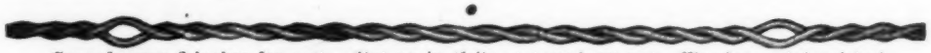
Eastern Branch, 151 LaFayette St., New York
Southern Branch, 10-12-14 Benjamin St., Atlanta, Ga.

Bale Ties and Buckles
Box Strapping
Corner Irons
Case Seals
Acme Galvanized
Twisted Wire

ACME
ESTABLISHED 1880



Spread every 6 inches for nails. Put up in Coils of 4,000-5,000 feet. Wooden reel furnished.

ELECTRIC SINGEING MACHINERY

FOR COTTON, WORSTED, SILK AND SCHAPPE YARNS AND WIDEGOODS

Economy, Quality, Hygiene

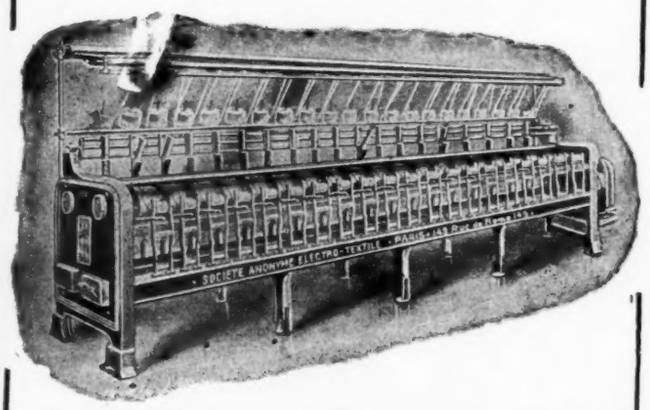
We lower your cost of production from 30 to 60 per cent.
We produce yarns of finer quality.
We produce yarns of better color.
We give you absolutely clean yarns and CLEAN SAFE WORK-ROOMS.
Simple to operate.

The only machine that allows manufacturers to meet the demands of increasingly rigid legislation controlling the health conditions of the work-room.

SOCIETE ANONYME ELECTRO-TEXTILE

SOLE AMERICAN REPRESENTATIVE

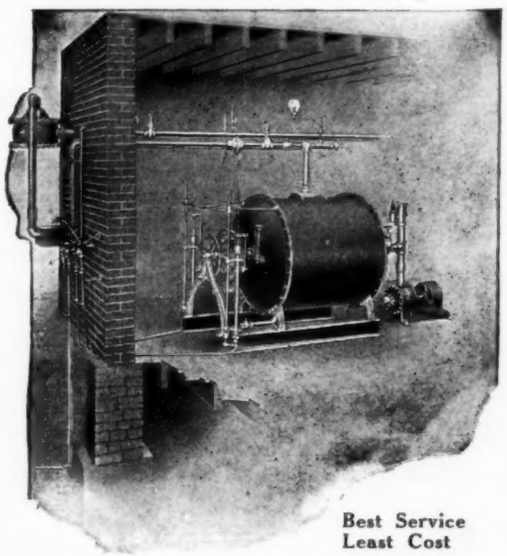
THEO. F. HUSSA, 136 Liberty St., **New York**



YOUR HOSIERY CLOTH AND YARN SINGEING

Can be done at less cost in less time, better and more uniformly by the gas produced by the

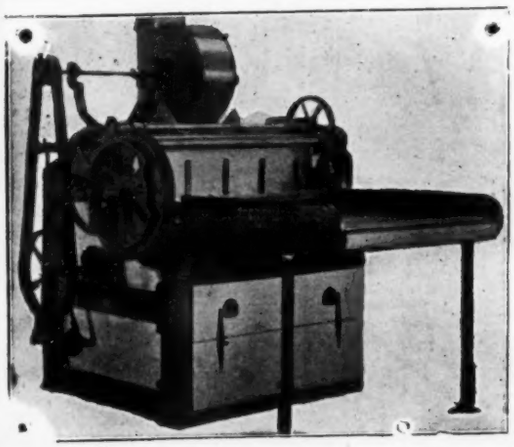
20th Century Gas Machine



Best Service
Least Cost

Clean, blue flame delivered under the pressure or force best suited for the weight and character of the goods you finish. No air mixed at burners. Write for proposition and catalog.

THE C. M. KEMP MFG. CO.
BALTIMORE, MD.



Schofield Patent Automatic Opener and Duster

For opening and dusting Wool, Cotton, Linters, Hair and kindred fibrous substances.

"Schofield" intermediate feeds for Cards, Wool, Rag, Waste, Hair and Lumper Pickers, Automatic, Cone and Oldham Willows, Rag and Extract Dusters, Waste Pullers, Blamaine Lap Feeds, Curled Hair Pickers, etc.

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ROTARY POSITIVE HIGH PRESSURE
BLOWERS

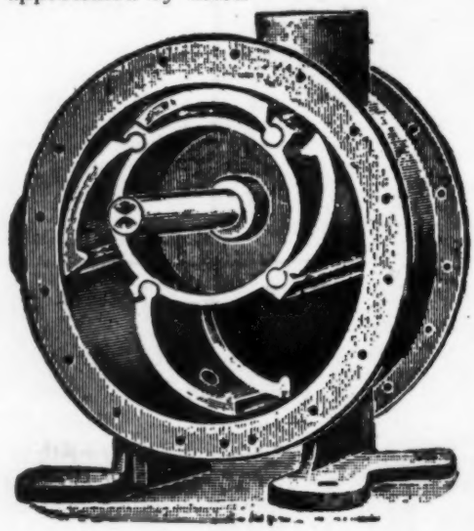
May be used for this, as well as many other purposes, including vacuum cleaning, brazing, forging, singeing, agitating dyeing solutions, etc.

A glance at the illustration showing the interior construction will show at once why it is impossible to get out of order. The wings are always in perfect contact with the cylinder while in operation, being held there by the action of centrifugal force.

Centrifugal force is a natural force which is always present in rotating bodies, and the curved form of the wings enable the machines to utilize this force to take up the slight wear which takes place at the tips of the wings.

It can therefore readily be seen that in taking up this wear the same condition in reference to a perfect fit is maintained even after long continued service. We have many letters on file showing that this feature of the machine is a very valuable one and much appreciated by users.

If you are purchasing a pressure blower, there is no use in paying good money for any other than an efficient one. We offer you a pressure blower in the true sense of the word, one that remains a real pressure blower, no matter how old it may be.



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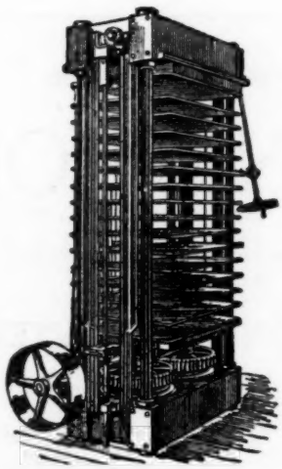

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FOR
Hosiery and Underwear
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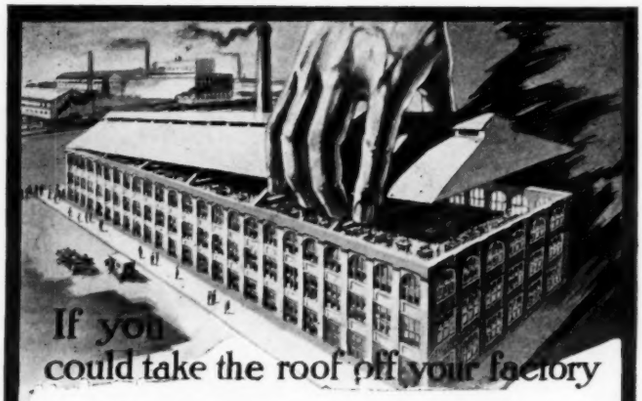
FRANKFORD, PHILA.



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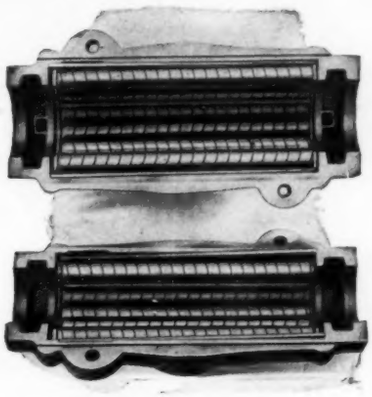

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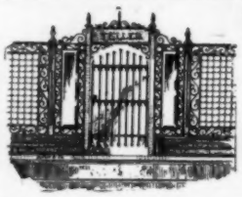

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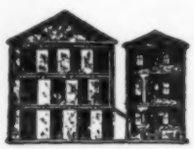

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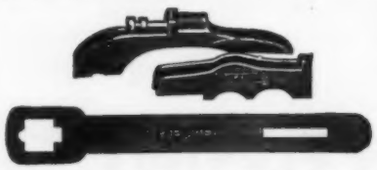

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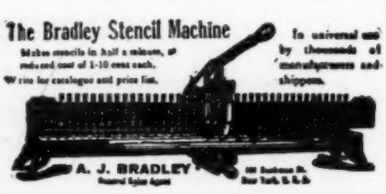

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Has a Scraping Surface in Every Direction.
Practically Indestructible.

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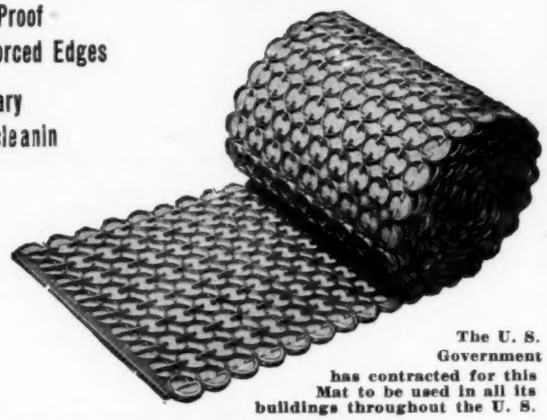

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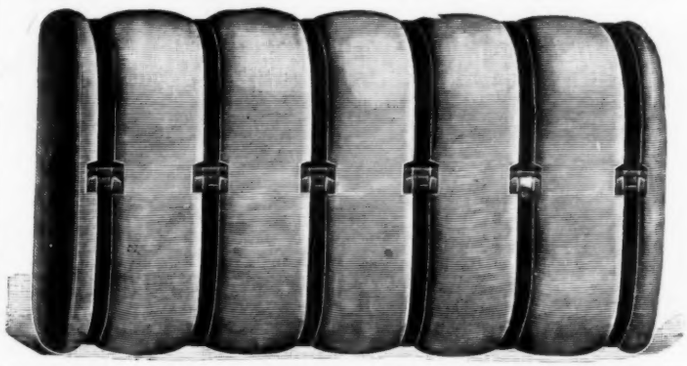
CARY'S BALE BAND AND BUCKLES

THOSE WHO HAVE TRIED THEM SAY THEY ARE THE BEST



THE ABOVE SHOWS A BALE OF COTTON SECURELY FASTENED BY OUR BALE TIES AND BUCKLES
NOTE ITS NEAT AND COMPACT APPEARANCE

Buckle can be applied with the Locking or Hook part next to the Bale, so that there is no possibility of its getting caught in other Bales when piled together.

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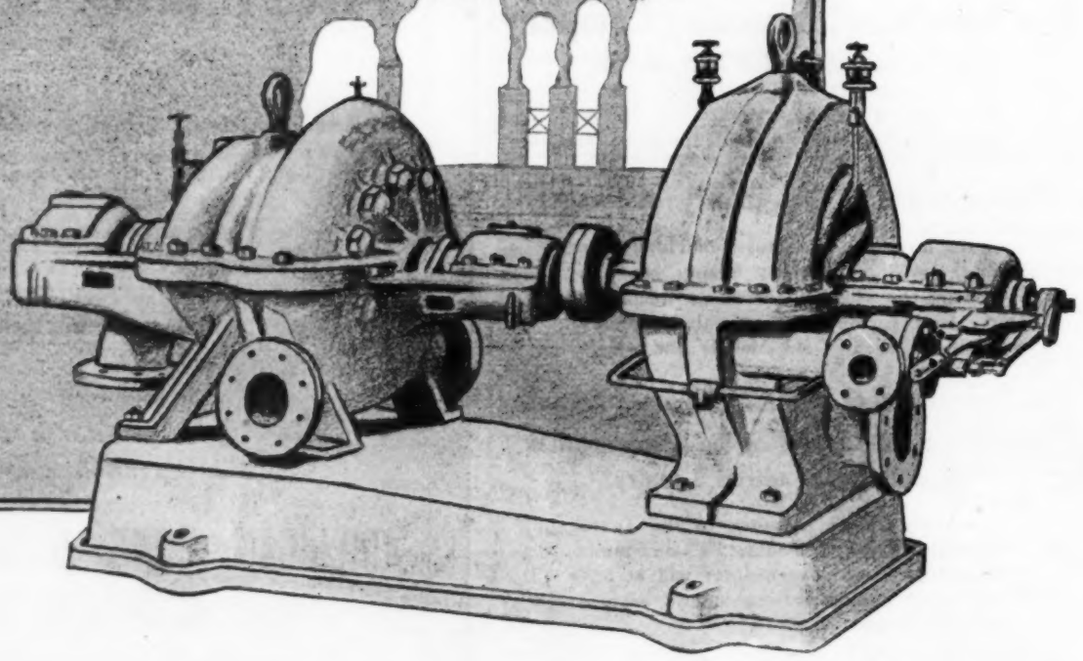

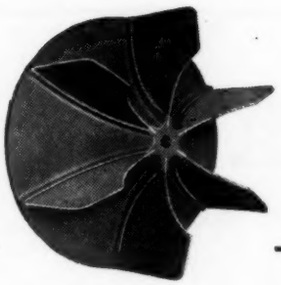

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because with the use of an ordinary monkey wrench, the hand and discharge of this fan can be changed in a few minutes time.

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is made in one piece on a cone shaped back, all being cast at one time.

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J-M Vitribestos is far superior to brick for lining stacks, because it weighs but 1-10 as much and only obstructs the opening of a 6-ft. diameter stack 11 per cent., while brick takes up 26 per cent. of the space. Consequently, **J-M Vitribestos** does not require such expensive foundations to support it, and insures much better draft.

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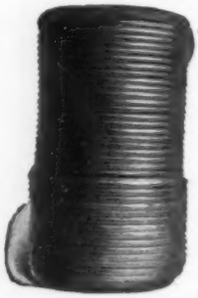

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It is exceptionably pliable, tremendously strong in fibre and will outwear any other belt we ever heard of. It will stand unusual strain without pulling out at the hook or breaking and will give the very best of service under any conditions. Prices and samples gladly furnished on request.

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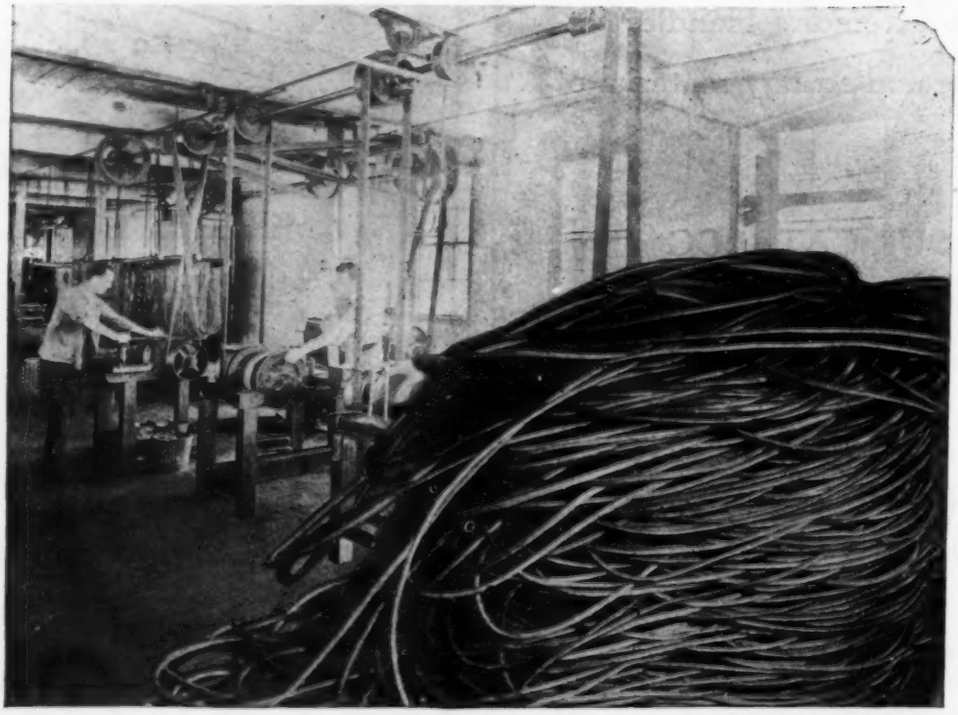

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Brick and Cement Coating

Applied overhead it will not drop off to damage machines and "lights like the sun" in any dark room. Is not affected by fumes, becomes a part of the material, and can be used on metal, wood or concrete.

It was used here.

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Allis-Chalmers Mule Motors are not only so designed as to secure the maximum output of the mule, but they also permit the natural speed variations of the machine so that the number of broken threads is greatly reduced and the quality of the product improved.

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Allis-Chalmers
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Alligator
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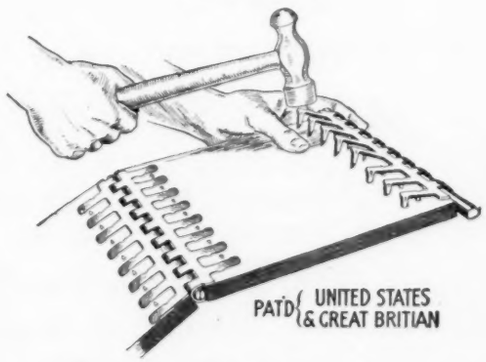

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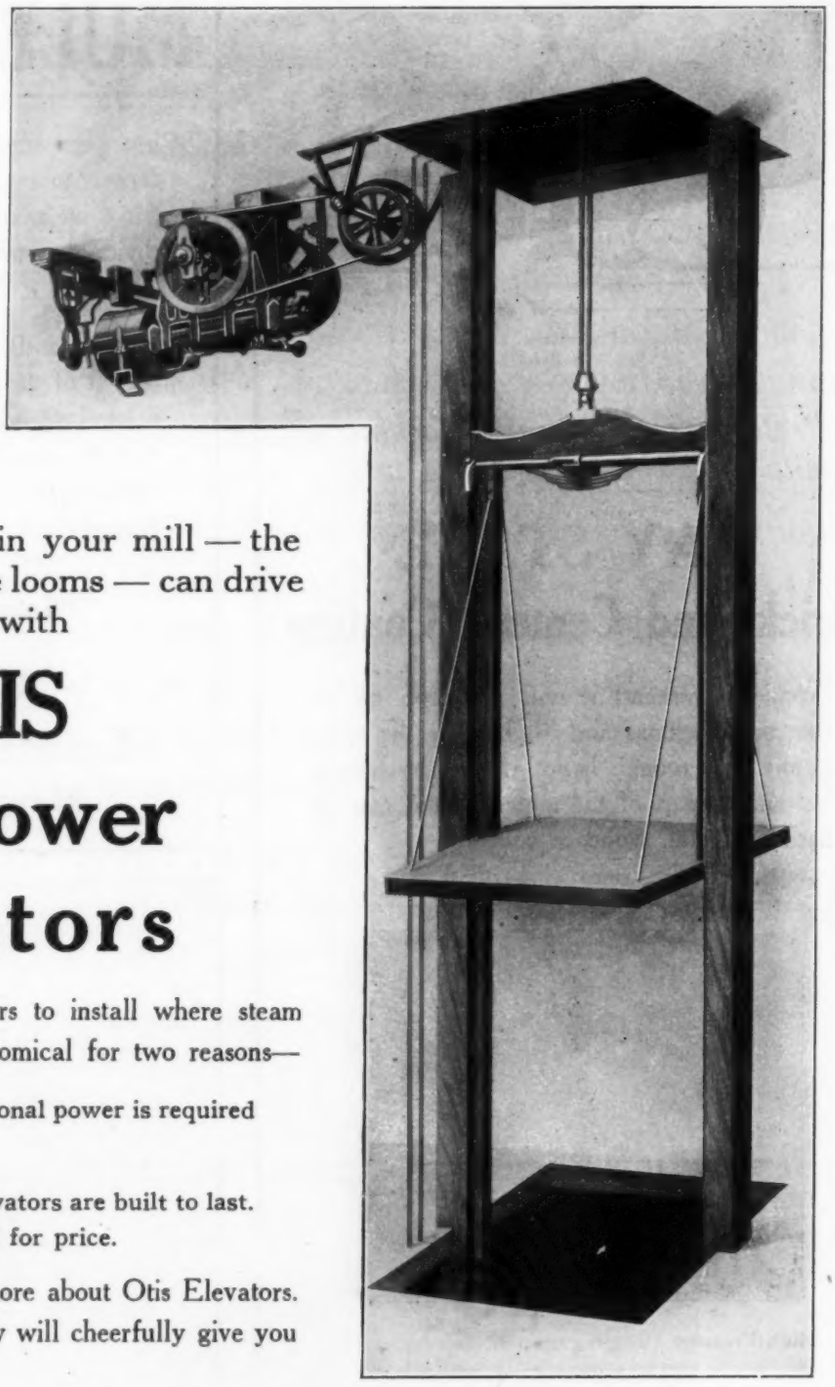

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The most economical Elevators to install where steam power is available—most economical for two reasons—

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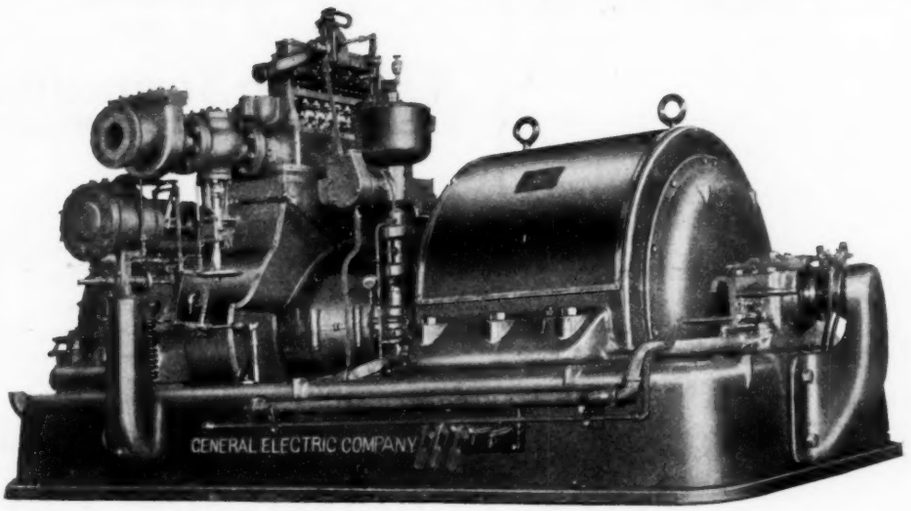

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The turbine casing can be so arranged that low pressure steam for heating or other purposes can be extracted at the desired pressure.

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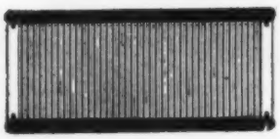
LOOM  **REEDS**

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CHECK THE WASTE.

Mr. Manufacturer, the question was recently asked as to how many of you are paying for efficiency and then are not getting it? If the proposed tariff bill is passed, a reduction in costs—an increase in efficiency—is absolutely necessary. An increase in efficiency means a decrease in waste. Therefore—check the waste.

We all think we know what this word "efficiency" means, as for example, the general definition just given, but perhaps none of us have thought carefully enough to be able to define it accurately. Webster defines it as "the ratio of useful work to energy expended," but this would hardly define the term when used in its broader sense. Nor would the definition, "power to produce the result intended," accurately state the whole meaning without a series of qualifying clauses. We know that the workman who is efficient always has a job, but the man himself probably could not tell why. An automatic loom is efficient because it reduces labor costs. So is an overseer efficient who succeeds in reducing the production of waste or seconds in his room. Neither are perfect, however.

It is therefore evident that the gauge or standard of efficiency is variable and that no man, no machine, no process, no system can be positively declared as 100 per cent efficient. In other words, "efficiency" is merely a relative term meaning that we are "producing the result intended" relatively cheaper or relatively better than we formerly did; relatively cheaper and better than our competitors are doing; and we are, therefore, comparatively efficient.

You will probably agree that efficiency cannot be bought in a bottle like a patent medicine, guaranteed to improve any factory system, and ready to be shaken and applied to the spot at any time. Yet you, Mr. Manufacturer, should be in a better position to diagnose the trouble than any outside doctor you could call in. You might not be able to prescribe a remedy, but you should be able to detect the cause.

William H. Harriss, treasurer of the Slater Manufacturing Company, recently stated before the National Association of Cotton Manufacturers that the mistakes of the mill man are hidden six feet in the waste bin. But this only refers to such mistakes as will directly result in cotton or mill waste. This classification, therefore, covers only one section of the road to efficiency. Many of you think you have this section well paved and in the best condition—but have you? Are you sure that it is not so badly worn from years of usage that your system wheels are traveling in ruts? Are you certain that slight changes in methods or practice would not result in improving your product—in checking the waste?

Efficiency destroys factory habits. It destroys complacency—sometimes yours and sometimes the other fellow's—but its price is eternal vigilance. We do not like to admit that we have been standing still, while the other fellow advanced. We do not like to admit that perhaps

some of our most cherished opinions are swayed by personal prejudices. It takes a man with great mental courage to publicly admit his personal errors. It is much easier to discharge a subordinate and make him the "goat," but that is not true efficiency.

Now let us leave the direct consideration of the mill wastes, the efficiency of the machine and the operative. Do you know what your product is costing you? Not as a whole; not at the end of the year; but as items and *now?* Do you know that the last lot of 28's run cost you more per pound than the previous lot, and why? If you do not know, why don't you? Is it because your cost system is inefficient? When you changed over that mill onto Egyptian and a whole lot of roving reached the spinning room before you found it was not up to breaking strength, be honest now, who was to blame? Was it you or the other fellow? The fault was with the management, not the operatives. Someone was inefficient. Can you put your finger on the man? Do you have to look in a mirror to see him? Check the waste!

In order to keep the machinery in the very best running condition you employ expert mechanics who devote their time to making such recommendations and alterations as will maintain that machinery in a high state of efficiency. You likewise devote much time and money to improving and perfecting the operatives who are to run this machinery. This latter is done in the name of humanity, but is intended to increase efficiency. This it does by improving their physical condition and creating personal interest in the mill work just the same as courtesy on the part of the men in charge begets a similar mental attitude and produces good will and better results on the part of those under them.

One more general point should be considered; this is the value of cooperation or team work among the overseers. No overseer should attempt to favor himself or his room at the expense of others, but should keep before him as his objective point the largest possible amount of finished product obtainable with the smallest quantity of seconds and waste.

Your overseers should read the article by "G. F. P." in this issue, as some of his suggestions may apply in your case. He is an active and practical mill man like you, Mr. Manufacturer, and his viewpoint should interest you as yours undoubtedly would him. In any case, get together and practice team work in the mill. Remember that no matter what decision the Senate may arrive at in regard to the tariff, it will not be of such a nature as to prevent the necessity of careful cost calculation and revision on your part.

Line up your executive forces shoulder to shoulder! Create the community interest feeling among the operatives! Personally ascertain whether the processes employed are the best obtainable for the class of work produced! Know to a cent what your finished product is costing you! Investigate, cooperate,—*and check the waste!*

The most striking increase in exports to the Philippines occurs in cotton cloths, for which the Philippine Islands are now our largest customer, the quantity exported thereto in the calendar year 1912 being 80 million yards, against 70 million to China, formerly the largest purchaser of American cottons, 45 million to Central America, 34 million to Aden, 30 million to Cuba, and 26 million yards to Colombia.

FROM AN ENGLISH VIEWPOINT.

The Journal of the Royal Society of Arts, in a recent issue, prints the following comment anent some of Secretary Redfield's expressed ideas as to the comparative efficiency of American operatives:

"The statements attributed to the United States secretary of commerce upon the comparative efficiency of American and English textile operatives are calculated to reduce statistical comparisons to deeper derision than they had hitherto reached. It is inconceivably nonsensical to suggest as a fact that 47 American cotton operatives perform the equivalent of 225 English ones, and that 109 woolen operatives in America do the work of 283 in England. By the common admission of American manufacturers, English workpeople are the best they ever receive, and in point of fact the major part of them in the United States are at the head of departments. The American machines are principally manned by imported workers, drawn from classes certainly not the most efficient to be found in Europe, and there are differences both in the manufacture and in the typical products which forbid anything like a level comparison. Cotton is spun in America on little else than ring-frames, which employ girl labor while in England it is spun to much greater fineness, on the average, and almost entirely upon mules and by men. The automatic loom is used in America, and is found to suit the conditions, but has had no highly considerable success in English surroundings. In the worsted industry in America, which is overwhelmingly the greater part of the industry in wool, the spinning-frames are English-made in virtually all cases, and just as little as in cotton can it be professed that American mills produce a generally similar class of cloth. The incompatibles are complicated further by introducing questions of value and a metaphysical twist is given to the whole undertaking by reckoning in terms of labor needed 'to create a unit of £20,000 increase in value.' In the absence of a common measure such a calculation is in any event useless, and the absurdity of this one is written plainly upon its face."

OPPORTUNITY IS KNOCKING.

The rapid assimilation of Western ideas by the Japanese has been evinced by the several strikes reported to have taken place within the last year or two. This was formerly an almost unknown phenomenon in Japan and it would seem to indicate a fair and virgin field for "Big Bill" Hayward and the I. W. W. Think of the glory attached to boosting the wages of working people who receive only 22 cents a day. Hie thee forth, sweet William, to the flowery land of Nippon. We wish you great success and sincerely trust you will never return.

[Note: This is neither an "insidious lobby" against the tariff bill, nor an organized attempt to assist American cotton manufacturers by forcing up the wage standard among their competitors.]

The exports to India show a marked increase, amounting to over 14 million dollars in 1912, 11 3/4 million in 1911, and 6½ million in 1906, the increase representing chiefly, as already explained, raw cotton and cotton cloths and, in addition thereto, lubricating oils, cigarettes and sundry manufactures of iron and steel.

PUBLIC SCHOOLS AND INDUSTRIAL EDUCATION

Are We Turning Out Large Quantities of Square Pegs and Trying to Fit Them into Round Holes? The Good Accomplished by Our Present Industrial Schools Demands National Attention. Prepare for Tomorrow.

(*Contributed to* COTTON.)

BY F. C. MYERS, MANAGING EDITOR, SOUTHERN MACHINERY.

The cost of the public school is borne by a community as a whole. The public pays for the service and the service should be designed for the whole public. The public school as organized does not serve the public equally. It serves the minority of the public better than it serves the majrity. This fact will be shown later. The studies in the primary grade train the boys and girls for the second grade. The second grade trains for the third. This training for the successive grades continues until the eighth grade is reached. Here the studies are selected with a view to fitting the pupils for the high school. The high school studies are selected and the standard maintained to fit the students for college. The courses in the college are designed for mental training.

Let me emphasize; no place in this educational scheme is given to teaching boys and girls to work, the whole tendency as the higher branches are approached is away from practical training. When a pupil completes the high school or college he or she is no more competent to earn a living than when the eighth grade was completed. The whole aim of the courses as they now stand is to prepare for the next higher grade. Of course there are some few exceptions.

This cultural education is desirable, but the majority of youths find earning a living more necessary. Certain features of the present system are essential for the making of good citizens. Boys and girls must know how to read and write, something of arithmetic, history and geography and about caring for their physical wellbeing. Most of all, I believe the things that will have the most influence on making good citizens and worthy men and women is knowing how to work and a respect for honest toil. Pupils in our public schools must be taught that work which is carried on away from grime and dirt is not the only honorable employment, but that manual labor is just as honorable and fully as worthy of respect as any other kind.

Crime is the direct result of forced or willful idleness. Pass along the streets of any city and see the potential power, labor and energy being wasted by young men and girls loitering about. Then go into our public schools and learn what is being done to teach such youths how to make an honest living. Culture can be attained outside the public school and if the seed is planted and surrounded with a knowledge of how to live honestly, by labor with the hands if necessary, the child will later obtain the culture required. Children are in charge of teachers during the formative years when impressions are most easily made and are most lasting. That is the time to teach them to work with their hands as well as their brains.

An inspection of the records of any public school will show a remarkable condition. It will be found that the number of pupils continually decreases as the grades advance. The amount of room and the number of teachers required in the high school as compared with the lower grades shows a remarkable shrinkage. What becomes of these pupils? They certainly do not die as fast as their number decreases. Looking about we see office boys, shop boys, girls clerking in stores, and boys and girls attending business colleges. In almost every walk of life we find these outcasts of our public schools and they represent the majority of the pupils who started in the primary grades.

Higher education is synonymous to higher standards of living. Higher standards of living call for better things to eat, better clothes and more costly entertainments. Frequently those who have received cultural training and have adopted the higher standards of living are unable to meet the demand by means of honest employment and they go to the other extreme. The criminal most injurious to society is the educated criminal, the man or woman who has been taught to desire and demand better things than are available on account of a limited purse.

Boys are naturally full of life and energy. They are often mischievous. Mischievousness is entertaining, but it is only a step to the bad, and as boys grow older it is but a short step to crime. If our public school system were organized to teach boys and girls useful and practical employment there would be less crime in after years. A high standard of living without a means of earning the funds to maintain it often leads to indebtedness and extravagance. The next step is petty deceit. Soon former deceits must be hidden and debts avoided. This leads to more and more underhand methods and gradually the conscience becomes hardened and the criminal fully developed. If we teach boys and girls something of interest and practical value we shall find it engaging their attention out of school hours. Above all teach them how to work and to be contented in whatever station of life circumstances place them. All cannot be bankers, millionaires or professional men.

There are very successful men, men of influence, who do not believe that children should be educated at public expense beyond the eighth grade because the majority of children in the public schools do not go further. If successful business men hold these views, there must be some reason for such conclusions regarding the public school. Consensus of opinion among such men is that too much attention is being paid to ethical and cultural subjects. The struggle for existence is pressing, and the demand now is for practical education that will at least indicate the natural "bent" of our youths and enable the teacher to advise them as to what vocation would be found most conducive to their best and highest development. Casual observation will show that there are too many misfit bookkeepers, who ought to be mechanics, too many inefficient mechanics, who ought to be following other occupations. Such men are not happy and doubtless will die failures.

The demand is for youths with practical training and natural inclination who can be developed rapidly. The method of selection has been to "hire and fire." This is

expensive for the employer and employe, and it should be a duty of our public schools to develop youths so as to reduce this waste. This can be done by giving them some idea of the line or lines along which they should concentrate their energies. Man's energy wears out soon enough without wasting it in vain attempts. To keep pace with this demand, private schools are being started which give industrial education only and train youths for responsible positions. These schools may have been organized for selfish purposes, nevertheless the result is a broader and better citizenship, including an insight into the form of government under which we live. Evidently these schools are accomplishing more than the developing of good workmen.

There seems to be a tendency among teachers, ministers, physicians and possibly others, to receive with impatience suggestions and criticisms regarding their methods from persons outside their craft or profession. There are reasons for this attitude. They seem to live somewhat apart; giving more thought to the mental than the practical phase of every-day existence which the average person is forced to follow in his struggle for a livelihood. They are seldom contradicted. Pupils accept what is told them without question or argument because the teacher is supposed to know. Ministers deliver their sermons. The congregation listens (or sleeps). The service concluded, the congregation leaves without an expression of approval or disapproval. The sermon may be discussed, but not with the minister. The patient calls the physician, gives the symtoms, receives a prescription and is told the trouble is a cold in the head, an attack of indigestion, or whatnot. The patient takes the medicine, without discussing the accuracy of the diagnosis. The physician's word is final.

The point I wish to emphasize is that the conclusions and statements of this class of individuals are not questioned. This unconsciously leads to a confidence in their own infallability that will not brook contradiction.

The conditions surrounding business men are entirely different. In furthering their business interests they meet opposing minds, and arguments that must be overcome. There is a continual conflict. Seldom can a statement go uncontradicted or unquestioned. The tendency is for the business man to view all matters from all sides; to thoroughly argue the question with himself before even a tentative suggestion is made to others. This leads to a greater respect for the opinions of others and a broadness of view that is difficult to obtain in any other manner. Environment has much to do with the habits of thought and in the two cases cited the environments are diametrically opposite. One leads to a seemingly egotistical appraisement of ideas and an assurance of conclusions. The other leads to respect for ideas until they are clearly shown to be in error.

My first suggestion for a reorganization of our present public school system is the placing of the selection of courses of study and methods of teaching in the hands of both business men and teachers. Give the business man an opportunity to assist in the development of the material he must use later on. This will not only increase his interest in the work, but it will bring our public school system more in tune with the demands of the hour.

Some years ago I took a course in physics. The teacher, judging from his laboratory work, knew the subject well. About the middle of the term the laboratory was moved into a new building, and you can imagine my surprise when I saw my teacher try to move a heavy box with a lever, the fulcrum of which was nearer his hands than the box. A laborer came along, saw his awkward position and showed the professor how to adjust the lever so that the box could be moved easily. You can appreciate the fact that my interest in the class and confidence in the professor fell off after that incident.

I do not relate this story to make laughing stock of my professor. It is far too serious. There are two lessons to be learned from the incident. First, that we should employ practical teachers. Second, that suggestions of value may come from entirely unlooked for sources. Any graduate from a high school, normal school, or college who can pass the usual examination satisfactorily will not necessarily make a good teacher. Practical teachers are hard to find and it may require considerable time to locate and induce them to enter the work. Perhaps when our public schools serve a larger part of the people, more money will be forthcoming, and stronger inducements can be offered to thoroughly competent teachers.

I can but hope to give my reorganization plan in general. It is to allow the child to follow its natural "bent" as far as possible and help it work along lines of least resistance. Devote the first six years of school life as at present to the common branches. These are the fundamentals upon which all knowledge is based. In the seventh grade begin the vocational or industrial training and have it of such a general nature that all the youths will take an interest. During this year not only will those students with a "leaning" toward mechanical work be detected, but all will have received some knowledge of manual work. In the eighth grade make the work more complicated, and devote a large amount of time to it. Small schools can employ this method since only a few students are required to form a class. Let the work be as varied as possible, but make it interesting and in keeping with the needs of the immediate neighborhood.

If this manual work is carried on properly, the pupils will want to continue after the closing hour, that is, those will who are inclined toward practical work. Many will not be greatly interested, and after a thorough test if it is apparent that the child is inclined toward book or clerical work, it will be useless to force him into manual branches. Let all the pupils follow the lines of least resistance and you will have more successful men and fewer dissatisfied clerks and poor mechanics working for the smallest wages.

Above all it should be instilled into the minds of the children that manual labor is not disgraceful and being soiled by work is not a mark of shame. The shameful part is to remain dirty after working hours. The dignity of manual labor is a most important lesson.

Give the children an opportunity to develop along the lines of their natural "bent" and we shall have men and women with clear heads and able to grasp opportunities. They will be ableto accomplish more in a given time with less fatigue and greater satisfaction to themselves and their employers. The day's toil will not be such a grind and the evenings will be spent in helpful study and harmless amusements.

The courses of study in the high school should be so laid that pupils can have either the cultural or the practical studies. After two years' work in the grades it will be possible to determine those members of a class inclined toward manual work, and those which are not. Every

one of you have heard the remark, "he is a born mechanic." This indicates the natural "bent" of the child and the line along which he should be fully developed. Let the children follow the lines of least resistance as long as you teach them to work and to respect labor.

The work in the high school will be properly graded and the courses selected so that those whose minds are so inclined will spend most of the time in the shop, while the other pupils will have full opportunity to pursue their books. It may be necessary to offer several entirely different courses, and in fact, have separate schools for such entirely different courses. But the student upon leaving school will be able to obtain profitable and congenial employment. Boys of from 14 to 18 years will not be obliged to work for inadequate sums in positions to which they are not especially adapted, because their earning capacity will have been developed in proportion to their natural ability.

Girls can be treated in a similar manner. Some of them are natural housekeepers, stenographers, etc. Any of you who employ stenographers know how scarce good ones are. Girls will be enabled to find their particular niche and will live happier, more contented lives than at present.

Young men will serve their employers better, earn larger salaries, and there will be more happy, contented marriages. It is sad to see a young married couple start out for the day's work together because the boy did not have an opportunity to learn to do that work for which he was naturally fitted. This condition is due to a misconception of the dignity of labor and an endeavor to maintain a standard of living that is beyond their means.

We cannot all own businesses, be expert physicians, teachers, ministers; some must do the hard menial work with their hands, some must work with their brains. Let the public school system be so reorganized that it will more nearly meet the needs of the majority. The rich and well-to-do can afford to send their children to private schools for cultural training. Families with limited means have no such opportunity and they far outnumber the well-to-do.

Industrial education is needed more in the South than in any other section of the country. The South is developing industrially more rapidly than any other section. Many responsible positions as well as those requiring the utmost skill will open during the next ten years. What is the South to do? Continue importing highly trained men from other sections to fill these high salaried positions and let her native sons fill the lower ones, or is she to arise to the opportunity and begin at once to educate her sons and daughters so that they may grasp opportunities when they come and make the best of them?

SOUTHERN TEXTILE ASSOCIATION.

The Isle of Palms. It would indeed have been a difficult matter for the arrangement committee to have selected a better or more suitable place for the summer convention of the Southern Textile Association. Located among the chain of islands that skirt the Carolina coast, twelve miles from the historic old city of Charleston, the Isle of Palms will long remain as a pleasant memory in the minds of the 300 or more members and guests who were in attendance at this convention. Leaving Charleston, with its narrow grass-grown streets vying with those of greater width and more modern construction, with its seventeenth century buildings sandwiched among those of twentieth century type, with its public market of wartime vintage surmounted by nature's scavengers, a flock of buzzards, the visitor crosses the broad, placid harbour. Behind lies the historic shore line of the city proper; far off down the bay to the right is "Bug Light;" and a little beyond old Fort Sumpter looms against the skyline, a grim and mute reminder of those days, now fifty-two years agone, when the quiet repose of this ideal spot was rent by man-made thunder.

After disembarking from the ferry, an electric train carries the visitor onward through Fort Moultrie, passing within full view of the huge coast-defense disappearing guns, mortar batteries and ramparts, backed by the barracks and other federal buildings. It is but a short ride from this point to the Isle of Palms hotel where on Friday and Saturday, June 20th and 21st, the members of the Southern Textile Association gathered for the eleventh semi-annual convention.

Because President McEntire and Capt. H. P. Meikleham, who was one of the speakers, were delayed in arriving, the meeting was called to order by First Vice-President Z. H. Mangum. The first paper on the program was "Evolution of the Cotton Card," by Charles Mills, member A. S. M. E. and consulting engineer for the Saco-Lowell Shops. Mr. Mills said in part:

The foundation of the modern card was laid more than one hundred and fifty years ago by Richard Arkwright, who invented and built the first machine to be operated by power for continuous carding. Previous to Arkwright's time fibrous materials had been combed or "teazled" by hand by straightening out and laying the fibres approximately parallel, in preparation for spinning by hand. Hand carding was slow and expensive. All motions of the human hands in performing work are alternating. The motions of revolving machines, broadly speaking, are continuous. Arkwright's proposition, therefore, was to design a machine to be operated by power, such that if continuously fed at a certain rate at one end with cotton would produce and deliver carded stock at the same rate at the other end.

Arkwright's carding engine contained all the principal features of the carding machine of today. There was a main cylinder, doffer, tops, feed rolls, doffing comb, all mounted on a supporting frame. The machine was almost entirely constructed of wood. One man of average strength could place the complete machine on a wheelbarrow and walk away with; the modern revolving flat card weighs about three tons.

On a small stream flowing through the little village of Cromford, in Derbyshire, England, Richard Arkwright built the first cotton mill to be operated by water power. He furnished the mill with machinery of his own invention, design and construction. I remember, when I was an apprentice visiting this famous Arkwright mill. It was at that time partially dismantled, but the building and machinery were in good state of preservation. The sight of this Arkwright machinery was to me an object lesson in ancient and elementary design, but at the time of its invention was a very long step in advance in the art of carding.

Although the principles embodied in the Arkwright card have remained exactly the same, the efficiency of the carding machine has been increased step by step, until, at the

present time it ranks with the most perfectly organized machines in the cotton manufacturing industry. Mechanical and textile engineers engaged in this branch of textile machinery business very early realized that the efficiency of the carding engine depended primarily on accuracy of workmanship and adjustment. Experience with cards of the Arkwright design demonstrated that wood construction was objectionable in that changes of the weather would warp the whole of the parts so that the desired adjustments could not be made or maintained. The first radical improvement in construction, therefore, was naturally effected by building the frame work of iron.

Coincident with iron construction also came increased dimensions of the card throughout. From 24 inches in diameter and 20 inches wide, the cylinders had by this time grown to 36 x 36 inches, and the doffer to about 15 inches in diameter. These dimensions were supposed at the time to have reached the utmost limit consistent with convenience of operation and efficiency in production in the mill. Later, experience, that great teacher, demonstrated that economy of floor space in a mill was of vital importance and the 40-inch card came into existence, giving a much greater carding surface and consequent increase in production per square foot of floor space occupied. The increase in dimensions of the card appeared to increase the labor cost of hand stripping on flats and cylinders. Necessity, we are told, is the mother of invention. It was necessary for reduced labor cost of stripping that brought about the invention of the self-stripper for cleaning flats. Cylinders and doffers were still being stripped by hand.

About the time that the 36-inch card gave place to the 40-inch card, the picker, for cleaning the cotton and forming it into a lap, was developed, and hand feeding of the card was superseded. The advent of the lap also brought about the addition of the lickerin to the card. About this time the cotton industry had grown tremendously, and with it the cotton machinery industry. The machinery manufacturers were vying with each other to produce machinery of greater efficiency. One group of machinery men was engaged in developing special lines of machinery for the manufacture of fine goods and another group for the coarser goods. The fine yarn mills continued to use top flat cards with self-strippers, and these were considered for many years to be the machine best adapted for the longer staples of cotton used in spinning fine yarns. The cotton manufacturers engaged in making the coarser goods gradually adopted the worker and stripper card, which was at that time better adapted for cotton of short staple and low grade. It was discovered, also, that in working low grade stock, the cylinders and flats on the regular top flat cards would load up much more frequently, and therefore required more frequent stripping than when engaged on longer staples and higher grade cotton.

On the worker and stripper card the rolls can be more conveniently stripped by removing from the card, and since they must be removed whether the card was of small or large dimensions, a much larger diameter cylinder was adopted, also, for coarse yarns a larger production per card was necessary, so the economy of a large diameter card cylinder with increase in number of workers and strippers was obvious. During the civil war, which caused the cotton famine in Lancashire, the mills equipped with machinery for handling the short staple Indian cotton were more fortunate than those equipped for longer staples. The coarser yarns were in very great demand. The machinery builders who made a specialty of the worker and stripper cards, therefore, were busy supplying the demand. During the ten or fifteen years, which included the years of the civil war, the worker and stripper cards belonged distinctly to the coarser yarn industry, and the top flat self-stripping cards to the fine yarn trade. It was during this period that Evan Leigh developed the idea of a card with an apron of flats which would revolve or traverse the arc of the cylinder; the flats to be stripped automatically as they left the cylinder; the flats to travel in a path perfectly concentric with the cylinder. This was the birth of the Revolving Flat card.

Up to this time every step forward in the evolution of the card had been taken with a view to increase the efficiency, or toward the reduction in cost of operation and production. The larger card with workers and strippers was generally adopted because of its larger capacity on coarse work. The better quality of carded work and consequently lighter carding was necessary to the production of fine yarns; therefore, the smaller card with top flats and self-strippers was preferred by fine mills. The English manufacturers were at first slow to adopt the revolving flat type of card; in fact, it was not clearly demonstrated that it was much of an improvement over the two other types until the late seventies, when improvements on the Evan Leigh design began to appear on the market. It was not until about ten years later, or about the year 1885, that the English revolving flat card obtained serious consideration in this country. The American cotton machinery builders had not been keeping pace with the English machinery men. That was the time when American cotton manufacturers discovered England, and began to import English card room machinery very rapidly. American cotton machinery manufacturers now began to bestir themselves. There was absolutely no demand for the old type American top flat card with railway trough and heads, and we were obliged to adopt the English revolving flat card as a model and go to work to develop a card which would have preference in this country over the English built card.

There are three things absolutely essential to efficiency in a revolving flat card; namely, simplicity in design, accuracy of workmanship and stability of construction. The efforts of mechanical textile engineers are directed to the production of machinery of the highest efficiency. The main object of the men who use the machinery in the mills is to maintain that efficiency. The greatest problem confronting the mill men today is the securing of efficient help to operate his machinery, but that problem has been somewhat simplified in late years by the development of greater efficiency in the machine. While the object of the manufacturer of machinery is to render his product fool-proof, the mill man has to deal more or less with inefficient help that *will* get ahead of him. It speaks well for the card, however, that although it is the most delicately adjusted machine in the mill, it stands up to the work if given reasonable care.

To discuss here the many and various so-called improvements which have been applied to cards from time to time during the last fifty years would occupy too much time. Let it suffice to say that scores of patented inventions have been applied and discarded. Broadly speaking, any invention applied to a card which entails additional complicated mechanism is liable to failure. Granting that the invention accomplishes the purpose for which it was designed, if the additional necessary mechanism calls for greater intelligence, care and attention from the card room opera-

tive, it will not be a practical success in the mill, and will not be generally adopted on its merits. The simplest is the best and the best is the simplest. As an example illustrating this point, I would mention one of the many so-called improved flat setting devices which have appeared from time to time. The first to make its appearance was the Ashworth device, which consisted of a series of steel ribbons, varying in thickness by a few thousandths of an an inch, resting on the top curved surface of the rigid arch. The flats rested and traveled on the surface of the uppermost ribbon. As the length of the card wire became reduced by grinding of the cylinder and tops, the uppermost ribbon was withdrawn from underneath the flats and replaced simultaneously by a thinner ribbon, thus the radius of the arc over which the flats traveled was reduced by the sum of the amount ground from the wire of cylinder and flats. In practice a second adjustment was necessary; that is, the center of the cylinder must be adjustable in order to maintain perfect concentricity between the cylinder and rigid arc over which the flats must travel, to compensate for the wear on cylinder bearings. In mill practice it was found necessary to hire skilled erecting men to make the necessary adjustments, as the regular card room operative could not be trusted with this work. Here was a case where the design of flat and cylinder adjusting mechanism was in theory absolutely correct, but its practical utility was very questionable, and for that reason it was discarded in a comparatively short time.

Other and still more impracticable and complicated means of setting have come and gone in the same way and for the same reason, but the simple one-piece flexible bend, as first invented and designed by Evan Leigh, is still in use, and after more than fifty years has proved to be the most reliable because it is the simplest and most convenient means for adjusting flats to cylinders. The proportion of flexible bends in use is vastly greater than that of all other designs of flat adjusting mechanism.

Among the most important of the elements which go to the maintenance of efficiency of the card is the mechanism provided for accurate grinding of the flats. Simplicity here is of vital importance. Many complicated mechanisms have been designed, tried out and discarded. The simplest and most reliable flat grinding apparatus is what we term, for want of a better name, the "Cradle Grinder," which consists simply of two adjustable roller-bearing heads, rigidly connected by two steel rods. The cradle receives the grinding roller, to which it is loosely attached by two hooks, so that the combination of cradle and roller forms the complete grinding apparatus to be transferred from card to card, as required.

The guiding surfaces of the cradle, which are hardened, rest on the working surfaces of the flat so that the cradle and roller float on the ends of the flat. There are no working parts to the cradle. All reciprocating mechanism is eliminated. One cradle with its grinding roller is sufficient for every twenty cards in a mill, instead of one complicated flat grinding apparatus on each individual card.

For grinding cylinders and doffers, the familiar traverse grinders have been in use many years, but their constuction has recently been much improved so that they are now more reliable and durable.

Improvements in design and construction of screens also have been effected, which have added materially to the efficiency of the card in that the later design facilitates control of waste or fly under cylinders and lickerins.

Along with the card has proceeded the development of the machine shop specially equipped for its manufacture. The regular commercial machine tools have been largely discarded and replaced with special purpose machines of greater efficiency and precision; also every detail of the card has been re-designed for the purpose of accurate and economical manufacture. Practically the whole product from the foundry to the assembling room is now finished by special machines.

From the Arkwright card to the modern revolving flat card is a great advance, made in a long time. From the village carpenter and blacksmith shop where the first Arkwright cards were built, to the latest modern card shop is also a long step—and the end is not yet.

The next paper on the program was "Increasing the Efficiency of the Operative," by David Clark. Mr. Clark outlined the difference between the majority of the foreign operatives of the New England mills and the native labor obtainable in the South, by picturing a vivid strike scene

PRESIDENT T. M. MCENTIRE.

from Lawrence and continued:

I do not mean to convey the impression that the New England mills are entirely filled with the class of people whom I have described, for the mill operatives of that section have been a regular procession of nationalities beginning with the English, and now drawn largely from Turks, Armenians, Greeks and Hebrews. As race has overlapped race, each has left its increment, but the general tendency has been to enter other pursuits and be succeeded by another and usually an inferior race.

We hear much of hereditary knowledge and long training, but it is doubtful if the New England mill operative of today has on the average worked in the mill as long as the average operative in the South. The superintendents and overseers of the Northern mills are mostly Americans or English, and they have acquired skill and system from long years of experience, and I attribute to them and their management the quality of the output of the New England mills. They require more of their operatives and they get more and better work.

Our raw material, that is, our operatives, are better

but our superintendents and overseers do not take as much care in training them or require as much efficiency. There is not an overseer before me who has not at some time said that if he only had a room full of spinners like the Brown girl, and a supply of doffers like the Jones boy, he would be happy and could run his production far above any amount he had ever obtained. And yet, how many have ever tried to produce spinners and doffers equal to the best ones in the room? How many have ever stopped to think why some were better than others?

The average overseer would probably tell you that a certain boy doffs faster than all the others because he moves faster, but if you will watch closely, you will be convinced that the way he moves or his lack of lost motion, has more to do with his efficiency than the actual celerity of his motion. Is it not worth your time to study the motions made by the faster doffers and to teach those motions to the slower ones? If boys learning to doff were taught to move their arms and bodies in a similar manner to the most expert doffers, would they not be more efficient than if left to pick up a method of their own?

It is a pleasure to watch an expert ten-side spinner, and have you noticed with how much less effort she tends her work than the four-side spinner in the next alley? Both are using the same roving, the same travelers, and spinning the same yarns, and it cannot all be placed to quickness of motion. The girl runs ten sides and keeps them up because she has system and dexterity, and dexterity means efficiency of motion.

When a new spinner is sent into the room she is given some kind of instruction but she is largely left to her own efforts and she finally hits upon a way of putting up the ends. As she becomes accustomed to that method, she naturally decreases to some extent the time it requires. Would it not be better if the motions of the best spinners were studied and care taken in teaching those motions to the beginners? The new spinner might never acquire the dexterity of the ten-side spinner, but she would be more efficient than if left to learn a method of her own.

What has been said of the doffers and spinners might also be said of the other departments of the mill, and nowhere does it apply more than to the loom. The simple action of throwing in the shuttle, the tying of broken ends and picking-out, all require motion, and in every room there are those who can perform those actions quicker and with less exertion than the others. Even as simple an operation as sweeping can be brought to a greater efficiency if the system and motions of the best sweepers are studied.

The president of a Southern mill which is spinning 80's to 100's, equal in quality to the best yarns made in the North, tells me that almost without exception his spinners have been produced from green help which were brought from the mountains. He found that spinners from coarse yarn mills who had picked up the art of spinning for themselves, could not be changed into efficient spinners without great difficulty, but green help could be trained to use their hands properly and by careful instruction become expert spinners. He considered his spinners now to be as efficient as the best fine yarn spinners in the North. In other words, this mill has demonstrated in a practical way that far better operatives can be produced by teaching them the most effective methods than by the usual plan of letting them learn for themselves.

Very few superintendents and overseers have ever given much thought to the most efficient methods of performing the work of the cotton mill operative, and only a few have systematically tried to teach those methods to the operatives. A boy may be taught to swim by throwing him in a pool and telling him to swim or drown, but he will never be as efficient a swimmer as the boy who is first taught a scientific stroke.

Some of you may look upon such ideas as foolish and impracticable because they are new to you, but let me tell you that in other great industries of this country, the work of the efficiency engineer, including his instruction in efficiency of motion, has become a regular department of the business, and high-priced men have been put in charge of those departments are obtaining practical results.

We are today facing a revision of the cotton goods tariff which will bring us in more direct competition with the other cotton manufacturing countries of the world with their cheaper labor, and it is going to put us on our mettle. The work of the efficiency engineer which has become a recognized feature of other industries, must now become more of a feature in the cotton manufacturing industry. His work will be largely that of designing and arranging the machinery along more efficient lines, thereby giving an increased output of equal or better quality.

The increase in the efficiency of the operative will, however, depend largely upon the superintendent or overseer, and is well worthy of study. Much can be done toward increasing the efficiency of the operatives by welfare work and care of their health, because it is well known that a maximum output cannot be obtained from sick or dissatisfied operatives. The other phase, or motion study, is the chief problem with which you must deal and which I believe you can handle. It has been used in other industries and it can be used in the textile industry. You men have raw material in the shape of mill workers of a uniform grade. You have on the average, better machinery and more modern equipments than the New England mills, and I consider that you are as intelligent and know as much about the practical side of the business as the superintendents and overseers of those mills. The great defect in your system is that you do not use as much care in the training and handling of the operatives and do not require as much efficiency, especially in relation to quality.

The next paper was entitled "Value of Modern Mixing Methods in the Waste Re-working Plant," by Sewell K. Oliver, superintendent Columbia Mills.

My subject, said Mr. Oliver, is one which has recently received much attention by the larger waste reworking mills and machinery manufacturers, and it is probable that you have already heard discussions of mixing systems in connection with the newer designs of waste machinery.

Re-working of cotton mill waste, as carried on by many mills who have not given the subject special attention, does not necessarily carry a guarantee of increased profits. Frenquently mills make an exhaustive study of machinery of the latest types which is especially adapted to the economical manufacture of their principal product. They then attempt to re-use their waste by mixing all grades together and running it through the worn out models of machinery which they have discarded when replacements have been made with improved machinery. The fact that this machinery is utterly unsuited to the work and may be the chief cause why the re-working plant fails to pay, is

often neglected by mill owners in their attention to improvements for manufacture of the principal product.

Both specially designed machinery and a correct system of mixing are necessary in order to get a reasonable profit from the use of waste. Failure to meet these requirements has been the cause of the generally accepted idea that there is not sufficient profit in a reworking plant to make it particularly desirable. If run correctly and with well-designed equipment, it will make a profit and a satisfactory one.

My purpose is not to attempt to show that new especially designed machinery is unnecessary, nor is it to make a comparison of results possible to be attained by either good methods or modern machinery alone. The idea is simply to present the subject separately. To allow a consideration of the measure of results which may be attained due solely to the methods of mixing. Generally, where modern machinery is used, the plan anticipates that a correct mixing system will be used in its operation.

The general suggestions are that we should clean all grades of dirty waste separately in a waste cleaner of good design, suited to give actual cleaning and not simply to ball up the stock. The cleaned grades of waste of the same general character as regards the dirt they still contain, can be combined and fed to the pickers together, but hereafter it is important that this set of grades should be run separately from any combination of grades of very much dirtier character and from any cotton or clean grades of waste that may be used.

The actual point at which it will become necessary to combine the two or three grades of stock or "mixing" which have been run through the pickers, will depend upon the machinery equipment; but, if possible, the stocks should be carded separately unless the type of card used will not permit of carding the lowest grade stock alone.

By re-arrangement of their working systems in this way, many who have been operating old machinery with picker room mixes, may materially better the cleanliness of their product pending the purchase of suitable equipment; or, if they do not wish to improve the character of their product, they may cut down or discontinue the amount of cotton which they may previously have used. They may also find it possible to utilize some grades of dirty waste which heretofore it had been their practice to discard.

Whether by increased price for a cleaner product or by ability to utilize grades of lower average price, it is conservative to estimate a saving in excess of one-half to one cent a pound by combining grades at the proper time, without noticeable increase in labor cost or decrease in production.

An example which attracted my attention to the loss in value occasioned by combining clean stock with dirty grades before working, occurred several years ago before the present methods were generally advocated; a mill had been in the habit of selling its picker and trunk willowed flyings to a local mattress manufacturer for 1¾ cents. The stock, however, was not entirely satisfactory even at the price, as they wanted a cleaner stock and offered an increase if it could be obtained. An attempt was made to make the same stock satisfy a higher standard of cleanliness by causing it to be run through the willower several successive times, but only slight improvement resulted. A new plan was next employed in that while the stock was run through the willow only once, a selection was previously made between the cleaner and dirtier portions of the flyings and each were willowed separately. These portions were afterwards mixed together and offered to the mattress mill. The difference in cleaning by this method was sufficient to cause an increase in the offered price by 1 cent per pound—an increase which was maintained for all of this grade produced by the mill for two years and until a re-working department was started.

The conservative possible saving mentioned should be sufficient to interest almost any one having charge of a reworking plant and cause them to experiment along these lines, should they already not have done so.

The next paper, "Qualifications for a Successful Weave Room Overseer," by R. J. Smith, was read by title only.

The committee on revision of by-laws then reported. The report was laid upon the table for further investigation and deferred to the November meeting. President McEntire having arrived the belated address of welcome was delivered by the Hon. John P. Grace, Mayor of Charleston. Mayor Grace said in part:

The textile industry, in my humble judgment, is going

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to be the redemption of the South, and in that work I am happy to say that the pioneers,—the people who poured their money into it during the days of adventure, when they little knew how much of it they would get back,—the pioneers in the textile movement of the South, were those much criticised, much kicked-about, and little appreciated capitalists of the city of Charleston. You wouldn't have your Pelzer today, or your Piedmont, or all those mills that dot the hill sides of the country if it had not been for the money that the people of Charleston, joining hands with the people of New England, were willing to put there, and it is peculiarly appropriate, now when you are well on your feet, and have grown to be big men in this great industry,—when no longer the old Arkwright carpenter shop cards are used, but those of modern steel of the best manufacture,—figuratively speaking, when you are the "fibre" of the cotton mill business of the world, that you should come back to the cradle of the business. We hope while you are here you will not confine your attention entirely to the Isle of

Palms, but come over to the city of Charleston, and let us show you what we have there. I will turn over the keys to you, and while you have got to behave yourselves after twelve o'clock at night and on Sunday, outside of those hours you can take anything that we have, and if some of you fellows should happen accidentally to stumble into the station house, all you have to do is to ring me up and tell me that you are still able to fly this red badge that you are wearing today, and I will instruct the officers to let you go. (Applause.)

There is one thing I want to mention, though. You have been talking here about limiting the qualifications for active membership in this association. I think that you should extend the qualifications, not limit them. I believe you ought to extend the qualifications of your by-laws, and you ought to admit "Mayors" to your organization. Put me down as one of your active members. You know I think you ought to have ladies in your organization, too. The idea of ladies not being admitted to a "spinners" organization! That looks like anology. Long before the Arkwright card, or before the days when cloth was woven in mills, the old mother sat by the fireside, and with a spinning jenny made socks for the men, and clothes for them, and made the flags that were unfurled in all the battles of the world. In this age of extension, when we are facing a new era, in this age when women are going out and earning their way, when they have got to stand up alongside of the men, and do the work of men, and not the work of machines,—because even though the best is the simplest and the simplest the best, you cannot make machines out of human beings, there has still got to be a soul behind every machine,—in this time the women are demanding, and properly so, their place in the affairs of the nation. This is an age now in which we are all coming into our rightful own. We are shaking down the old barriers of cast and creed and race and origin and sex. This is an age when merit is appreciated, and when "honor is given to whom honor is due." Therefore in that spirit, in the spirit of democracy, I welcome you to the ancient city of Charleston. (Applause).

President McEntire then called upon Capt. H. P. Meikleham, of Lindale, Ga., to respond to the address of welcome. Mr. Meikleham spoke in part as follows:

Mr. President and Gentlemen of the Convention: I consider it quite a privilege and quite a pleasure, I assure you, to respond to the address of welcome of the Mayor of Charleston. In the first place, though, I want to apologize for being late in arriving here this afternoon. The mayor did not. I will apologize on his behalf, too. The president and I were both late for a very good reason. We hated to leave the mill until the last moment, because we do not dare stay away any longer than is necessary for fear somebody will find out that they can run without us.

I was asked by Mr. Carter about two weeks ago if I would furnish him a copy of my address. I couldn't do it. I suppose that if I had taken the proceedings of all the manufacturers' meetings for the last five years and read them over, and then written it out in cold blood, I might have made a pretty decent address, but I thought I would come here and look into the faces of these manufacturers and get some inspiration on the spur of the moment and make an impromptu reply to the address of welcome, and you gentlemen would appreciate it more, and it might be a better speech after all.

I suppose, although I am only a new member in the Association, that I was rather instrumental in having the meeting held in Charleston. It seemed to me to be the logical point, for a good many reasons. It was a pleasant place to come, and a convenient place to come, for the most of us. Charleston has a name throughout the United States for conservatism, if I might express it that way, and I think it fitting that the nobility of the manufacturing world should meet here. I am glad there are no Presidents and Treasurers here. They think they are the nobility, but gentlemen they are not. The only nobility connected with them is what you might call a "financial nobility." They want to give us the responsibility and let us do the work, and they draw the salary.

The money of the people of Charleston was largely instrumental in seeing so many cotton mills in South Carolina, and if it had not been for the encouragement that was given by Charleston to this industry we would not have accomplished nearly as much as we have. Our first and best encouragement, financially and otherwise, came from Charleston.

Now I am not going to bore you with a long, tedious talk, especially as my talk comes just after the eloquent

SECRETARY A. B. CARTER.

speech of the Mayor. I can't make speeches. You know I am a mill superintendent, although I am working for a Northern corporation that gave me the title of "Agent." What that means I don't know, and haven't been able to find out in thirteen years. The kind of speeches we superintendents are used to hearing is for some one to come to us to settle a dispute, saying, in an excited way, "Mrs. Smith's boys are fighting and throwing rocks at my children, and I wish you'd have it stopped." My family speeches are generally heart to heart ones, so I don't think you ought to expect me to make a real speech.

The Mayor made you a mighty good speech a little while ago, but I believe he was just a little bit embarassed to know how far to go. He gave us a rousing welcome, and the hospitality of the city, and turned over the keys to you, and told you if you should get into the police station to call him up. I don't want to criticise the Mayor, but he could have put that in a little better way. I don't think any of us are going to get locked up, and if the Mayor had told us to go as far as we liked, just so we didn't commit murder

or rob a contribution box in a church, we would have understood just how far we could go. He needn't have mentioned about the police station. (Laughter).

I want to say that I am very glad that we are holding this convention here; we can derive a great deal of pleasure from meeting at the Isle of Palms. I belong to almost all of the manufacturers' associations that I know anything about, except the North and South Carolina Associations, and they won't let me join those, but I believe this association does more good, and can accomplish more than any other that I know of. You superintendents and overseers are the backbone of the whole thing,—your presidents don't think so, and your treasurers don't think so, but it is to you in a great measure that the success of this industry in the South is due. I am glad to say that although I have a large number of good friends in the North, and some of our best manufacturers have come from the North, every day there are more Southern fellows taking charge of plants, and running them successfully too.

As a Southerner, I am free to say that I do not believe our war set us back,—it must have been an act of Providence, or some unforeseen force,—you may call it what you please,—but it was a blessing to us any-way. If we had not had that war we would never have come to the development that we have, and the mere fact that it left us destitute has developed us in a way that no section of the world has ever developed before, and the cotton manufacturing end of it has developed as much as any. I hear time and time again that the Northern mills are run better than our Southern mills. Now I learned the mill business in the North, and I am in close touch with Northern mills, and I want to tell you gentlemen that you look after details a great deal better, you run your mills better, and but for certain unavoidable conditions, you have the most successful mills there are in the country.

The first session then adjourned.

The evening session was called to order at 8:30 o'clock by President McEntire and after disposing of some unfinished business the report of the auditing committee was read and accepted. The balloting for the officers was next in order and the following slate elected:

President, T. B. Wallace, Supt. Dunean Mill, Greenville, S. C.

1st Vice-president, C. H. Goodroe, Supt. Yazoo Yarn Mill, Yazoo City, Miss.

2nd Vice-president, M. E. Stevens, Supt. LaGrange Mills, LaGrange, Ga.

3rd Vice-president, E. E. Bowen, overseer weaving, Victor Mills, Greer, S. C.

4th Vice-president, W. H. Hardeman, overseer weaving, Newberry, S. C

Secretary, A. B. Carter, Athens, Ga.

Treasurer, Marshall Dilling, Supt. Avon Mill, Gastonia, N. C.

New members of the board of governors, of which J. Y. Jones, overseer of spinning, Newberry, S. C., is chairman, are as follows:

M. B. Clisby, overseer of carding, Newberry, S. C.

C. P. Thompson, Supt. Trion Co., Trion, Ga.

J. W. Kelly, Pelzer, S. C.

D. R. Harriman, Jr., Greer, S. C.

J. W. Clark, West Durham, N. C.

The president was instructed to appoint a committee of five to arrange for the next convention and these appointees will be announced later.

The program committee was changed and now stands as follows: W. C. Dowd, David Clark and A. E. Escott, of Charlotte, N. C.; T. M. McEntire, Gastonia, N. C.; and L. L. Arnold, Atlanta, Ga. President McEntire then declared the meeting adjourned.

The remainder of the evening was devoted to dancing, or quietly smoking and renewing old acquaintances. "Dick" Thomas created much amusement by alternately "leading" the band and chasing a very elusive bee that could be heard buzzing whenever one's back was turned.

Saturday was literally spent in and on the water. One enthusiast who did not retire until 3 a. m., left a call at the office for 5 a. m. so he could go in the surf and he was not lonesome, there were others. At 11 o'clock the special cars left for the wharf where the entire party was given a boat ride around the harbour, during which the band played and refreshments were served. A few returned to the island to remain over Sunday, while those located at a greater distance started for home Saturday night. Many members were enthusiastically in favor of returning to the Isle of Palms for the next mid-summer convention. That Friday night combination of moonlight, music and mirth will linger a long time in the memories of those present.

THE IMPORTANCE OF THE DEPRECIATION CHARGE.

(*Contributed Exclusively to COTTON*).

BY "OBSERVER."

In the May issue of COTTON are two articles of special appeal, "Cost Keeping and Efficiency," on page 241, and "Cotton Mill Accounts," on page 262. Cost accounting has been given a lot of attention during the past few years, though not so much that it has lost any of its interest. As a matter of fact, while about everybody in the textile trade realizes fully the desirability and even the necessity of ascertaining production costs, many are still struggling with the big question How? The Ways and Means Committee of a manufacturing plant of this kind does not need much additional argument on the subject of studying costs; but it would like as much light as possible on the problem of developing the necessary data.

There is one feature of accounting, however, which many cotton manufacturers have lost sight of entirely, or give only casual attention to. That is the depreciation of their equipment. Inasmuch as the investment account is one of the largest contributing to the overhead expense of the plant, neglect of the depreciation charge against it is a serious omission, which is certain to result in the manufacturer deceiving himself as to the results which he is securing. He may believe that he is making money, only to find, when the time comes to replace worn-out or obsolete equipment, that he has been losing it. And the failure on the part of so many members of the trade to adjust this factor satisfactorily warrants considering the question rather extensively.

In the first place, it is obvious that a charge for depreciation should be made, in addition to an interest charge against the investment as a whole. The interest charge, it should be noted, covers interest merely; takes into account the earnings which could be realized if the money were put out in some form of gilt-edged security, not subject to depreciation and involving no risk of losing the principal. The depreciation charge, however, is an entirely diffe.ent

matter. It is intended to take account of the inevitable and constantly active wear and tear of the machinery, which makes it certain that in the course of time it will necessarily have to be replaced. No cotton mill owner should deceive himself by believing that when he makes a charge of 6 per cent on his investment, covering interest, he is taking charge of depreciation in any manner; he is not. Unless the depreciation charge is made, he is suffering loss of his principal steadily and without any compensating return.

The question of the amount of the charge cannot be answered generally, for the reason that the equipment in one kind of mill may depreciate more rapidly than in another. Looms and knitting machinery, for example, probably wear out faster than spinning equipment and carding machinery, on account of the greater vibration which is involved in their operation. But assuming that the average piece of equipment is good for 15 years, which is certainly a liberal estimate, it is necessary to charge off 6 2/3 per cent of the original cost each year, in order that the end of the period may find the manufacturer in a position to throw the machinery onto the junk-heap without loss.

But the annual depreciation charge, representing the intrinsic loss of efficiency suffered by the machinery, does not tell the whole story. Is a new machine manufactured in 1895 and held in storage until now, worth the list price at which it was sold then? Of course not; and yet, as far as depreciation is concerned, the machine is as good as the day it was turned out of the factory. What other element has entered to cause it to be worth little more than old iron? The answer is almost axiomatic: improvements and new features have been produced so rapidly that the machine made eighteen years ago is not merely antiquated, but obsolete. The manufacturer who attempted to run his mill with equipment of this kind would lose money in a hurry, simply for the reason that it is not capable of producing goods as cheaply as modern machinery now to be had can do.

That involves another factor in the depreciation question. Not only must the mill-owner make a charge sufficient to cover the actual, intrinsic loss resulting from use, but must charge off a sufficient amount to take care of any replacements made necessary by the introduction of new and better machinery. Up-to-date equipment is the life of any manufacturing plant. Everybody realizes that; and this realization should be accompanied by a determination not to be compelled to add to the capital investment of the plant when new machinery is purchased, but to make it come out of the depreciation fund created by the charge referred to above.

That suggests another idea. In the printing business which, by the way, is in the very forefront of American commerce when it comes to the use of cost systems calculated to show every fact entering into production so exactly as to enable costs for every job to be entered with absolute reliance upon their accuracy, the plant-owners have given great attention to the question of depreciation. Most of them make a 10 per cent charge against their investment, realizing that while their machinery may not wear out in ten years, most of it will be ready for the scrap-heap by the time a decade has passed. And here is another point worth noting:

The progressive printers do not merely charge off 10 per cent for depreciation, using this charge in making up their general or overhead expense, which in turn is figured into the cost of production and the selling price, so that the depreciation element is ultimately paid by the consumer, as it should properly be; but the returns from this charge are not put into the general account of the business, but into a separate fund. This depreciation fund is used for the purpose for which it was intended; that is, when any machine wears out or becomes obsolete, it is replaced by a new one, which is paid for not out of the general account, but out of the special fund which has been created through the use of this charge.

Isn't that the logical way to handle the proposition? If you are making a charge for depreciation, and then figuring the results of the business as though all that is left over after paying current expenses is net profit, aren't you again fooling yourself, and making the margin of profit appear wider than it really is? If you charge for depreciation, the charge should show in the accumulations, in the sinking fund created to enable replacements to be provided for; and any other way of handling it involves the assumption that the charge is either unnecessary, or that the manufacturer is assuming that his net profits, which are used in the payment of dividends on stock, are greater than they really are. The chances are that the net profits are just as much less as 10 per cent of the machinery investment amounts to, if the concern is using 10 per cent as a depreciation charge.

Ten per cent may seem large to many conservative manufacturers—especially those who are not considering that feature at all just now; but considering all of the questions involved, it does not appear to be too great. The confirmed pessimist may say, of course, that it makes no difference, in the end, whether the charge is made or not; that goods have to be sold at the market price, and that knowing that this price isn't as much as it ought to be in order to produce a fair profit, isn't going to help the situation any. This is perfectly true, but—

What *is* the market price of a commodity? Isn't it the average of the prices at which manufacturers are willing to sell their product? The market is not an arbitrary creation, which some supreme being has set up, to be used as a fetish by men in a given business; it is the net result of the offerings of manufacturers of their goods, and the prices at which they are willing to sell fix the market.

That being true, it is obvious that the market price represents, or should represent, the cost of the raw material plus the cost of manufacture plus a profit. That goes without saying; and if the market price represents merely the cost of material plus cost of manufacture, without a margin for profit, then it isn't a market price at all. It may be what buyers are willing to pay for goods; but if manufacturers gently but firmly decline to sell on that basis, the goods fail to move and there is no market on that basis of price.

This is where the importance of knowing the cost of production comes in, along with the necessity of making an adequate charge for the depreciation of equipment. The manufacturer who doesn't know what it is costing him to do business, that is, what his overhead expense is; who doesn't know his labor expense, nor the cost of operating his plant, expressed in terms of the product, may sell at a price which does not include a profit; but the manufacturer who *is* informed won't do so.

It may possibly discommode the individual who knows his costs pretty accurately to go into the market and attempt to sell his goods at a figure which will include the essential factor of profit, for the reason that others, not so

well informed, may be willing to accept prices below the dead level, carrying no margin for profit; but it is certain that temporary inconveniences for the sales department or temporary slackness in the operating department is better than permanent bankruptcy; and that, of course, is the only finish which can be predicted with certainty for the cotton manufacturer, or anybody else, who spends money and time and effort and energy in making goods, and then sells them without realizing the profit to which he is justly entitled.

Cost studies are therefore not hopeless. It may seem for a time that it is useless to buck against the general opposition, and useless to attempt to get a better price than others are demanding for the same class of goods. But educational work along this line; cooperation in the associations and elsewhere in the study of the cost of manufacture, and the constant determination to sell goods at a profit will do wonders in raising the level of prices to the point where they belong.

A story is told of a spinning mill which operated in New England about 20 years ago. Those in charge were two young men with ambitions. They were determined to make a good showing, and to get the business. The times were rather depressed, and business was not to be had in any large quantity. Result: the ambitious young men went into the market and bought orders by making price concessions which could not be justified by any possible manner of reasoning. They astonished their stockholders and directors for a time with the profits they were apparently making; but there came a day of reckoning, when it was found that they had been juggling operating expenses in order to show paper profits, and that the business was really on the verge of bankruptcy. Of course, the young men passed out of sight and the prices on this mill's goods went up to normal figures.

This shows that sometimes the vagaries of one big producer can affect the market price; but it also shows that in time the price is bound to return to a point where there is a profit in it for the manufacturer of goods which are made right and sold right.

OBITUARY.

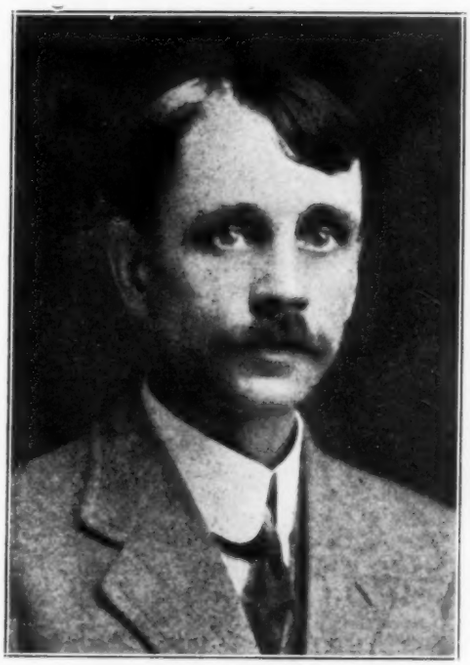
Charles Herbert Moody, agent for the Dwight Manufacturing Company's plant at Alabama City, Ala., died at the Davis Infirmary, Birmingham, Ala., on June 4, following an operation for appendicitis. Heart disease was the immediate cause of his death.

Mr. Moody was born in Chicopee, Mass., August 22nd, 1870, where he spent his boyhood days obtaining a high school education, also taking a business course and attending a drafting school at night. Afterwards he entered the employ of the Dwight Mfg. Co., at Chicopee as draftsman and designer. At the time the Dwight Co. started to build their Southern plant at Alabama City, Ala., which now has a capacity of over 60,000 spindles and 2,000 looms, J. Howard Nichols, then treasurer of the Dwight Manufacturing Company, chose Mr. Moody to accompany his son, Howard Gardner Nichols, to Alabama City, to oversee the erection of the plant and the building of the village in which the operatives were to live. Young Mr. Nichols died some months later as the result of an accident. He had been agent, with Mr. Moody as his superintendent, up to that time.

The plant was then under Mr. Moody's direct charge for some little time, when a new agent, Mr. Tilton, was appointed. He remained in that capacity only a short period and was followed by R. A. Mitchell. As superintendent of the Dwight Company during the term of Mr. Mitchell's agency, Mr. Moody continued in charge of manufacturing. In 1907 Mr. Mitchell resigned his position and Mr. Moody then succeeded him as agent, which position he has since held.

Mr. Moody first came with the Southern plant of the Dwight Company when he was 24 years of age, and the length of his term of employment with the company in the several capacities extended over eighteen years. Under his direct control the manufacturing was most successfully handled, and his help and influence in perfecting Alabama City as a place of residence for the operatives contributed largely to the present most effective and beautiful city.

The funeral was held from his late residence, the agent's house in Alabama City, on Friday, June 6, and the interment was in the cemetery at Gadsden, Ala. The funeral was attended by many of his friends, among whom were the prominent officials of a number of Southern mills. The



CHARLES HERBERT MOODY.

mill was closed the day of the funeral, and over 600 of the operatives attended the services, which were held on the veranda of the house. Mr. Moody leaves a widow and two children, Charlotte Foreman aged 12 and Charles Herbert, Jr., aged 11. He had been for a number of years an active member of the American Cotton Manufacturers' Association. His operatives showed their appreciation of him by electing him twice as Mayor of the city and numerous times as a member of the City Council. At the time of his death he was President of the School Board, Treas. of the Masonic lodge at Alabama City and a director of the Etowah Trust & Savings Bank at Gadsden.

In the death of Charles F. Pitman, Thursday, May 15, Laconia, N. H., lost a citizen who has been a very important factor in the welfare of the community, not only in business and manufacturing circles, but also in hospital work, public library, churches, charities, and in fact in almost every line of endeavor which has tended towards

the progress and betterment of the city. He was born in Laconia, and passed his entire life in his native town. It is but simple justice to his memory to say that he was one of Laconia's best and most useful citizens, a man who had the utmost respect of the entire community, and whose passing leaves a vacancy which can with difficulty be filled by another.

He was a son of the late Joseph P. and Charlotte A. (Parker) Pitman, born October 6, 1847. He was educated at New Hampton institution and Phillips Academy at Andover. Upon leaving school he entered the general merchandise store of Pitman & Tilton, with which he was connected from 1865 to 1870. He then turned his attention to the hosiery manufacturing industry, and was in company with his father and the late Daniel A. Tilton from 1870 to 1874, thoroughly mastering the details of the management of the concern. In 1874 the Pitman Manufacturing Company was incorporated, and he was general manager of the concern from its incorporation until the day of his death, and president of the corporation after his father's death in 1883. Mr. Pitman devoted himself very closely to the management of the hosiery business, was thoroughly familiar with every detail of the industry, and was generally acknowledged to be one of the best and most successful hosiery manufacturers in that section of the country, the products of the Pitman mill being always in good demand among the buyers as far West as Chicago and St. Louis.

He married, October 15, 1890, Grace Anna, daughter of the late O. A. J. Vaughan, who survives, with one son, Charles Joseph Pitman, now a student at the Choate school in Wallingford, Conn. He also leaves a sister, Elizabeth W., the wife of Hon. Charles U. Bell, of Andover, Mass., associate justice of the Superior Court of Massachusetts; and two brothers: Joseph W. Pitman, treasurer of the Pitman Manufacturing Company, and Walter H. Pitman, of the Pitman hardware store; besides several nephews and nieces.

GEORGIA COTTON MANUFACTURERS' ASSOCIATION.

A joint meeting of the Executive and Legislative Committees of the Georgia Cotton Manufacturers' Association was held at LaGrange, Ga., on Tuesday, June 10, with President F. B. Gordon in the chair.

The minutes of the previous meeting were read and approved, as was the memorandum report of the treasurer. President Gordon announced the appointment of a committee on "Cotton Baling and Tare," as follows: Oscar E. Elsas, chairman; S. A. Carter and Clyde King, all of Atlanta.

The question of special committees to investigate waste, coal buying and power was discussed at some length, and President Gordon was authorized to appoint such committees at his discretion. Several other matters came up for discussion, among which was the location for the next meeting of the Executive Committee. Macon, Ga., was finally decided upon, and the official call will be sent out later.

At LaGrange the visitors were the guests of Fuller E. Callaway, chairman of the Tariff Committee of the association. Before the meeting, which was held in the Board Room of the First National Bank, the visitors were tendered an automobile ride around the city and shown the several mills located there. The country estate of Mr. Callaway was also visited. This is the famous "Ferrell Garden" estate, which has been well known throughout the South for more than seventy years. The gardens are being renovated and enlarged by Mr. Callaway, who expects to erect a modern home on the site of the old house. When completed, this will be one of the most magnificent country homes in the South.

Returning to the city, the party was shown through the new Callaway department store, and later served with a bounteous luncheon in the "sanitary restaurant," which is one of the adjuncts of this up-to-the-minute establishment. Among those present were: F. B. Gordon, Harry L. Williams and E. W. Swift, of Columbus; George H. Lanier, of West Point; S. A. Carter and L. L. Arnold, Editor of COTTON, Atlanta; G. Booker Scott, of Scottdale; J. A. Mandeville, of Carrollton; C. V. Truitt, J. G. Truitt, Roy Dallis, J. A. Perry, Editor *LaGrange Reporter,* R. C. Freeman and Fuller E. Callaway, of LaGrange.

All members located near Macon should remember that they will be welcome guests at the Macon meeting, and make it a point to attend.

AS OTHERS SEE US.

Are we improving our baling methods and practice? Truth demands a negative answer. It has been demonstrated that the gin-compressed bale makes a neat package. Many American spinners have declared their willingness to pay a premium on cotton baled in this manner. Why has it not been adopted? The following extract, reprinted from a recent issue of the *Journal of the Royal Society of Arts* states some rather unsavory truths which are doubly emphasized when it is considered that the accompanying photographs were taken six years ago:

When an American judge stigmatised the American cotton bale as "a dirty, damaged, disreputable, water-soaked, wasteful, slovenly, clumsy, highly-inflammable, turtle-backed package," it was generally felt that language could go no further and that measures of reform would have to ensue. Six years of hearty accordance with this anathematisation leave the bale unaffected. The reasons for its lamentable condition are better understood, and the tentative recommendations for its improvement have recently been made by a Washington official. The raw cotton is sent from the farm to the ginnery to be stripped from the seed and be packed in ginners' bales of a superfluously heavy and wretchedly inferior canvas. The bale weighs roughly 500 pounds, and conveys 19 to 24 pounds of bagging and hoops. Most gin presses in America are inefficient, and before export the bale has to be reduced in size to economize freight. For this purpose it is sent to a compress, owned, like the bagging factories, by a trust. Export cotton is sold on a contract known as the "c. i. f. and six," descending from the days of lighter cotton bales, and sanctioning a tare of 6 per cent (30 pounds). The ginnery tare of an average 22 pounds is excessively heavy to begin with, but in order that the shipper shall not lose any weight, the weight of packing is bloated to the full 30 pounds or beyond at the compress to the shipper's orders. The rules do not admit of the adding of more than a specified number of hoops, or the difference might be made up in steel. Accordingly there are sewn to the bale a number of patches of second-hand bagging proportionate to the circumstances, and cotton shippers take frankly into calculation their profit on patch-

PART OF A SHIPMENT OF 721 BALES OF WEST AFRICAN COTTON, EX. S. S. "KARINA," SHIPPED BY THE BRITISH COTTON GROWING ASSOCIATION, MAY 1, 1907.

PHOTOGRAPH OF A COTTON SHED, TAKEN ON THE SAME DAY AS THE ABOVE, SHOWING THE USUAL CONDITION IN WHICH AMERICAN COTTON IS LANDED IN LIVERPOOL.

ing. The Egyptian bale, weighing 720 pounds net, arrives in immeasurably better condition than the American, with a 3 per cent tare, and the Indian bale is efficiently protected by a 2 per cent tare. Under the joint influence of superannuated contract rules, the poverty of planters and ginners, the interests of middlemen and trusts, and the force of old custom, this inefficiency survives. Sea freight at some 15 pence per 100 pounds, is paid on thousands of tons of ragged jute, whose only service is a pernicious one. Bales are needlessly damaged by water or destroyed by fire because the packing is inefficient. The cotton is soiled, and carelessness in its handling is stimulated by the force of bad example. No similarly valuable produce is so scandalously mishandled, yet nothing more tangible than a suggestion to change the export contract is forthcoming officially from America. The proposal is that a conference should be called representing the whole cotton-using world to determine on some such measure as the curtailment of the 6 per cent tare to five per cent. There are potentialities of good in this mild palliative measure, but where so much is wrong consumers may excusably feel that their assent should be conditional upon some promise of spontaneous improvement in baling conditions.

A foreign business man informs an American consular officer that he desires to get in touch with American manufacturers of cotton and other knit goods. He states that he has been importing considerable quantities of this article from Germany, but now desires to give the American article a trial. Correspondence may be carried on in English. Apply to the Bureau of Foreign and Domestic Commerce, and refer to file No. 10071.

Watch out for oil spots on your cloth, for oil costs money and money pays dividends.

Mill Conditions and Market Reviews.

SOUTHERN MILL SITUATION.

(Special Correspondence.)

While there has been a great deal of uneasiness, due to the fear that the bottom would be knocked out of cotton tariff schedules, conditions at present are good. Compared to the situation prevailing in June and July two years ago, conditions are excellent. Instead of general curtailment, and dead markets, as then existed, the majority of spindles are busy and the demand for goods is good.

Naturally at this season of the year business is not at its best. But mill men seem to be confident and optimistic. The tariff schedules, as offered by the Senate finance committee, have been studied carefully, and cotton spinners have at least gotten a few of the increases they have been struggling for.

It is the general belief that once the new schedules are put into effect, and business accustoms itself to the change, conditions will not be so bad after all. Mill men interviewed are anticipating an active fall and winter trade.

An indication of the general confidence is the fact that an unusual volume of improvement and extension work is now under way. During June announcements of extensions of mill plants have come in frequently, and several new mills have been reported.

The meeting of the Southern Textile Association at the Isle of Palms during the month was one of the best in the history of this growing body. An able set of officers was chosen, and an all-round successful convention was enjoyed by a large delegation. Discussions were of a high order. The past year was one of success for this association, and many plans for future growth are being laid.

Numerous mills are planning various "treats" for their employees. The Greensboro, N. C., mills have spent thousands annually in giving their employees a picnic in the summer months and what with barbecues and the like, there is no little fun in store for operatives during the coming summer.

The Proximity Mfg. Co., of Greensboro, N. C., is busily engaged now with its dyeing and printing plant. The building is being equipped with machinery for a daily capacity of 100,000 yards of finished product.

Beginning on the evening of Friday the 8th of August, and continuing to Monday morning, August 18th, several of the large cotton mills around Greenville will be closed in order to give their employees an opportunity to enjoy a summer vacation. While not all the mills have made definite announcements of this closing, several have done so, and the others, it is expected, will likely give a shorter holiday. The Monaghan Mill, the Carolina Mill, the Brandon Mill and the Westervelt Mill are among those which will be closed down between August 8th and 18th. It is reported that the Woodside Mill will close down for a period this summer, but the officials of the mill have made no definite statement.

The Camperdown Mill will be closed for holidays Thursday, Friday and Saturday of the week of July 4th, these being the 3rd, 4th and 5th of the month. Officers of the mill state that they could not definitely anonunce whether or not the mill would be closed for any additional holiday this summer. Officers of the Poe Manufacturing Company said that it was improbable that this plant would be closed for a holiday of any length.

The new Draper looms for the Eureka Mill at Chester, S. C., are being installed. The Jewel Mills at Thomasville, N. C., are increasing their equipment by the addition of eight cards and four speeders, as well as a Foster winder. The Albion Mill at Mt. Holly, N. C., are adding some Fales & Jenks tape driven spinning frames to its equipment. The Courtney Mfg. Co., at Cateechee, S. C., has also placed an order for additional spinning frames.

One of the interesting news items of the month is the report that the Coosa River Spinning Co., of Bon Air, Ala., has been purchased by the Danville (Va.) Knitting Mills. It is understood that the spinning plant is to be kept busy making yarn for the Danville plant and that improvement in equipment is contemplated.

NEW ENGLAND MILL SITUATION.

(Special Correspondence.)

The reporting of a tariff bill from the Senate Finance committee left little encouragement to cotton manufacturers who have anticipated that the present Congress would revise the cotton schedules symmetrically or scientifically. Some minor changes were made and the tax of 30 per cent on alizarin dyes used in colored goods was removed, as predicted a month ago. But the schedule as it relates to jacquard figured goods and fine fancies of all descriptions is hopelessly irregular, while the yarn schedules are so illy-drawn that a needless disorganization of this country's yarn business is certain to result.

Nearly every cotton manufacturer of experience who has appeared before the present legislators, privately or in committee, has urged the wisdom of specific duties as an administrative measure. When they were finally convinced that the purpose of the Administration was to hold to the ad valorem system, briefs were drawn up showing how amendments could be made to the Underwood bill which would preserve the balance in the desired reductions. The Senate bill came from the committee with the ad valorem system overturned, so far as the silk industry is concerned, but with all the ad valorem rates inserted on cottons, woolens, and linens. In other words, the silk industry has been particularly favored as against the other textile branches.

The theory that New England is to be the great sufferer from this revision still obtains, but it is true only in-so-far as New England contains the largest investments in textile industries. Any student of the schedules as a whole will discern that action has been taken in many directions which will disorganize the small export trade already existing. Moreover, the whole effect of the revision will be to disorganize the domestic system of merchandizing in the matter of fine and fancy cotton products, without giving any assurance that either consumers or domestic manufacturers can ultimately benefit in anything like the degree accruing to special importing interests.

The presentation to the Senate Finance committee of a brief prepared by independent cotton manufacturers of

New England, who are the men who have consistently favored a downward revision of the tariff for some years, showed to experts in tariff matters that leading Southern manufacturers and these New England men are not very far apart upon the proposition to revise schedules downward in a way that will not give special protection to a few interests. Whatever may be the outcome of the radical onslaught that is being made upon the textile industry of the country in the present Congress, it is the belief of many New England men and many New York experts, that the true mean of advisable revision at the present time lies somewhere between the amendments to the Underwood bill proposed by this group of independent New England manufacturers, and the first plan proposed to the present Ways and Means committee, for the American Cotton Manufacturers' Association by Lewis W. Parker.

To merchants, the most unsatisfactory phase of the tariff situation now is that the proposed bill will not settle the tariff question except during the life of the present Administration. Trade has been waiting and liquidating for a long time. The tightness of money is accelerating the dissatisfaction of business interests. Confidence has so far departed in textile circles that political interests of great power are again finding it easy to urge that it is better for the country to permit the present slashing to go on until the mass of people have grown tired of ill-considered legislation by radical factors. But these things all make for further unsettlement in trade and finance and merchants ask only that unsettlement give way to action. They hope to secure an active fall and early spring business immediately after it becomes known what the tariff changes are to be. Unfortunately for the long future, these men are confident that after the first flurry of activity in filling up empty shelves there will come a gradual lessening of consumption due to the long readjustment which must follow the enactment of the tariff measure now proposed.

The present policy of large factors in New England mills is to continue limiting production to actual orders. To induce sales, very close prices are being made by the richest corporations, and in many instances, it is the avowed purpose to accept business at a minimum of profit to be secured by operating large plants in full. This policy is naturally pressing hard upon the smaller factors, and where mills of insufficient capital are being forced to run to meet pressing obligations, actual liquidation is taking place. Mill financiers regard this condition as a cause for urging limited borrowing for new investments or for the replacement of old machinery with new.

A conservative estimate made at Boston this week shows that about 83 per cent of the cotton machinery of New England is in operation. Further curtailment will occur during the summer months because of the scarcity of labor. The Fall River Iron Works plant is still idle for the seventh consecutive week. Fifteen per cent of the looms at New Bedford are idle. Some of the large Lowell mills are to take advantage of the mid-summer holiday to close their plants for a week or ten days, and nearly all the mills propose to close Thursday evening, July 3, until Monday morning, July 7. Printers are moderately busy. The American Printing Company has been running in full and is installing more wide printing machines. The Pacific has been doing a good business on crepes and fine specialties, but sheer printed wash goods have been very slow this season. Stocks of print cloths at Fall River aggregate 850,000 pieces, principally odds and specialties. Sales on contract for July amount to 110,000 pieces weekly.

Bleached muslins and wide sheetings were revised for the fall trade to a basis of 8¼ cents for Fruit 4-4 goods, and 23 cents for Peperell 10-4 goods. Fruits have since been advanced ⅛ cent a yard. Mills making the best known brands have orders in hand to care for the output for the next six to eight weeks. The Amoskeag Company sold 40,000,000 yards of 32-inch chambrays for fall and spring delivery, and has been gathering a steady business on new lines of bleached madras. Trade in staple ginghams is active enough to take care of the output but dress gingham business, especially in narrow widths, is light.

Staple and fancy tickings have been sold moderately for the next two months, Amoskeags being on a basis of 13 cents for 8 oz. goods. Denims have sold fairly well but no large advance business is in hand. Fancy and fine ducks are well sold. Cheviots and other working suit materials have had a moderate sale but the day to day trade is sufficient to take care of any accumulations. Mills making napped cottons are finding difficulty in handling additional fall business and buyers are clamoring for deliveries on old orders.

The greatest hesitation is seen in goods that are likely to be affected by the tariff. Plain lawns in narrow widths are selling very low, and in fact ½ cent a yard below the prices current for similar constructions at Manchester, Eng. Wide lawns have been in better demand of late but not for far distant delivery. Exceptions are found in some mills that have contracts running from July to January. There is business enough offered for all fancy looms on crepes, voiles, ratines, and some lines of poplins. But it is largely on cloths required for delivery before November. Many mills decline business beyond that date unless it is clear to them that buyers do not fear foreign competition on the particular cloth sold. Silk and cotton goods are very well sold for future delivery, especially jacquard patterned fabrics.

The proposed tariff law will affect cotton quilts directly and buyers have been slower than usual in placing fall orders. The low priced crochet quilts have been moving slowly. The satin goods have been doing better and are well sold in a few of the leading quilt mills. Bates fancy colored and printed quilts are well bespoken for the fall trade. Fancy cotton blankets appear to be in light stock in many places. The mills engaged on them are very busy and are being urged to hasten deliveries and to do what is possible to increase the output for the early fall distribution.

The advance spring business on underwear and hosiery is coming forward well to date on the staples. Staple hosiery has been sold in a large way for spring by the leading New England knitters, particularly the goods that retail at two for a quarter, 15 cents and 25 cents. In fact, the Ipswich and Lawrence orders have been larger than ever before under similar circumstances. New lines of sheer fine gauged hosiery to sell at 25 cents have been brought out for spring. The union suit business placed for spring has gone beyond the expectations of sellers. As the leading mills have only recently entered this business in a larger way the volume of orders seems very striking. There has been a good business placed on two piece goods for spring, particularly on Lawrence and Otis lines. The Ipswich labor troubles that have been going on for some weeks are petering out gradually.

The finishing works are doing a limited trade. Orders come in fitfully and for quick delivery so that it is difficult

for managers to say from week to week what the outturn will be. This is the result of the hand to mouth methods of selling consequent upon business hesitation. Some of the bleacheries have been very busy and others have been running irregularly. The closing of the Passaic branch of the U. S. Finishing Company, pending some form of reorganization not yet determined on, has given more work to the various New England branches but they are not running in full.

Machinery works are running in a conservative way. There is work enough in hand to keep a fair part of the working forces employed. Many orders are for mills that do not desire to hurry additions contemplated, or to complete changes that would have been made if the trend of legislation and financing had not become so uncertain. The demand for wider machinery is growing fast and there is also a distinct gain in the demand in New England for automatic looms.

COTTON CROP CONDITIONS AND A REVIEW OF THE MARKETS.

(*Contributed Exclusively to* COTTON).

BY H. AND B. BEER, NEW ORLEANS.

Of late the cotton market has ruled steadier and somewhat higher owing to the crop having received a little setback by the low temperatures experienced in the early part of this month, especially in the South Atlantic states, where the weather was the coldest and the crop more susceptible to injury from low temperatures owing to the smallness of the plant, which was due to the lack of rain in the eastern belt in May.

No harm of consequence came to the growing plant in any section of the belt, however, as the temperature was not low enough to do damage other than to retard the growth of the crop. In the meanwhile the weather has become more favorable in all sections of the cotton region, fair and warmer having set in, which has been beneficial, and, as a result, crop prospects as a whole could hardly be more favorable at the moment.

In the Southwest, the most important section of the belt, the very high condition of one month ago has been maintained by alternating rains and normal temperatures, and the crop outlook in Arkansas, Oklahoma and Texas is reported to be as good, if not better, than at this time one year ago. This is a very significant statement when it is realized that Texas and Oklahoma made record yields last year, the former producing nearly 5,000,000 bales of cotton.

Aside of the appearance of the weevil in South Louisiana and Southern Mississippi, crop prospects in the Mississippi Valley states remain very favorable, in fact, the outlook in Louisiana, Mississippi and Tennessee is the best in years, and there is every prospect of Louisiana recovering a great deal of its lost ground in the making of a cotton crop this year, and the same may be said of Mississippi, if the weevils are held in check.

Crop accounts from Alabama and the South Atlantic states are decidedly more favorable than one month ago, despite the low temperatures in the early part of June, and there is every prospect of making a good crop east of the Mississippi river, as conditions are much better than last year.

A notable feature of this year's crop, insofar as present conditions are concerned, is that the fields are clean, being free from grass and weeds, cultivation has been thorough and more fertilizer is being used in all states. Under the circumstances, a good foundation has been laid for the making of a very large crop, perhaps a bumper yield, with anything like favorable weather during the summer months.

According to the New York Financial Chronicle, the increase in the acreage devoted to cotton this year is 3.2 per cent over last year's area and about 2.7 per cent larger than in the record crop year of 1911. The acreage this year is placed at 38,573,441 acres, last year it was 37,377,276 acres, and year before last 37,581,022 acres. The following is the report by states:

Year—	1913. Acres.	1912. Acres.
Virginia	42,796	41,957
North Carolina	1,664,000	1,648,000
South Carolina	2,766,000	2,766,000
Georgia	5,522,000	5,467,000
Florida	293,000	299,000
Alabama	4,157,000	4,106,000
Mississippi	3,554,000	3,417,000
Louisiana	1,253,000	1,090,000
Texas	12,522,000	12,041,000
Arkansas	2,415,000	2,322,000
Tennessee	859,000	838,000
Oklahoma	3,358,000	3,198,000
Missouri, etc.	142,000	129,000

According to the United States Census Bureau the world's production of cotton last year was only 480,000 bales less than in 1911, notwithstanding the yield in the United States to have been 1,850,000 bales smaller. This was due to foreign countries having produced 1,370,000 bales more in 1912 than in 1911. For the year ending August 31, 1912, the world's consumption was only 20,402,000 bales. Production in 1912 was 21,817,000.

THE YARN MARKET.

The yarn market for the past month has been comparatively quiet. The beginning of the month showed a moderate demand for yarns, for spot delivery, but the quantity purchased was so small as to make it necessary for a large quantity of sales in order to show a respectable aggregate. Some spinners continued behind on deliveries and manufacturers were kicking vigorously. There was a marked scarcity of 10's, 12's, 24's and 26's Southern frame spun cones for prompt delivery and even 14's and 22's were not plentiful. A number of Southern spinners whose yarns have a good reputation for quality, reported that they were sold up to November, December and January. One manufacturer of hosiery yarns reported that he had over five hundred thousand pounds of yarn sold into 1914. Sales of small quantities of 24's Southern frame spun cones for spot delivery were made at this time for 24¼ and 24½ cents.

As the month wore on the market took a better tone, probably due to the advance in the raw cotton market. A pretty good volume of knitting yarns was put through for both prompt and future deliveries, but the business of weaving yarns were confined to spot deliveries. The selling agents for carded yarn hosiery reported that the mills were well sold up and were looking for business for the next season. Combed yarns were in light demand and fine two-ply yarns had very little call at this period. Weaving yarns were a little more firm but there was little change in the

situation. I. W. W organizers are wandering about the country looking for fertile fields in which to plant their seeds of unrest and they lose no opportunity to foment trouble.

The market at the close of the month looks some stronger and while the knitting yarn end has furnished the bulk of the business, there is considerable activity in weaving yarns for quick delivery and prices are firmer all along the line. The coarse numbers are showing advances of half a cent to a cent. Taken as a whole, the market looks much stronger than at any time for several weeks. The demand for spot delivery of light weight underwear is surprising the trade with the result of something more than the normal demand for raw materials for the knitters. Carded yarn hosiery is also reported to be in good demand and children's ribbed goods are scarce. There has been a very good demand from hosiery manufacturers for all numbers from 12's to 30's, but they are particularly strong for 16's, 18's, 20's and 24's. Spinners of fine two-ply yarns are, however, more in need of business than those interested in the carded yarn end. This applies equally to both Northern and Southern spinners. The prospective buyers' ideas of values are somewhat below what most spinners are willing to consider. Eastern spinners are asking 76 cents for 80's 2-ply, while the buyers are offering 72 cents for the same numbers. It is predicted by some dealers in touch with the market that 50's 2-ply and finer will be selling for 2 cents a pound more than the present prices within the next two weeks. There has been a good demand for snigle combed peeler from 14's to 36's, but especially on the lower numbers. Some Southern Spinners are asking on a basis of 26 cents for 10's frame spun combed peelers, while Eastern mill spun combed peeler cones are selling on a basis of 26 to 26½ cents for 10's. Sales of 30's Southern frame spun combed peeler were made for 30 to 32¾ cents for prompt delivery. There is not much improvement in the demand for fine mercerized yarns on cones. The carpet trade continues quiet and men's wear market dull. Damasks are reported dull as also are hair cloths. As a rule, weavers are buying from hand to mouth but there are a very few who are buying for August deliveries. Prices have advanced a little and are firmer at about 22 cents for 20's 2-ply warps. There are practically no stocks of weaving yarns in the market and it would take very little of the curtailment that is being threatened by some spinners, to cause a general scarcity in coarse numbers. Conservative dealers are of the opinion that 22 cents for 20's 2-ply warps is about as low as the price will go for the present.

Following are recent quotations on the Philadelphia market:

Southern Single Skeins.

4s to 8s	18	16s	20½@21
10s	18½@19	20s	20½@21
12s	19½@20	26s	23
14s	20½	30s	24

Southern Two-Ply Skeins.

8s	18½@19	24s	23
10s	19 @19½	26s	23 @23½
12s	19½	30s	24 @24½
14s	20	40s	29
16s	20 @20½	50s	38
20s	21½@22	60s	49 @50

Carpet and Upholstery Yarns in Skeins.

8-4 slack	20½	8-3-4 har twist	17½@18
9-4 slack	19½		

Southern Single Warps.

8s	19	20s	21
10s	19½	24s	23 @23½
12s	20	26s	23½
14s	20½	30s	24
16s	21	40s	28

Southern Two-Ply Warps.

8s	19	24s	23½
10s	20 @20½	26s	23½@24
12s	20½	30s	24 @24½
14s	21½	40s	28½@29½
16s	21½@22	50s	38 @38½
20s	22 @22½		

Northern Two-Ply Carded Peeler Skeins.

20s	25	36s	32 @33
22s	25½	40s	34
24s	26	50s	43
26s	26½	60s	49 @50
30s	27 @27½		

Two-Ply Combed Peeler Skeins.

20s	28½	50s	45
24s	29½@30	60s	50 @52
30s	33 @34	70s	62 @65
40s	38 @39	80s	71 @73

Single Combed Peeler Skeins.

20s	28	40s	38 @39
24s	29	50s	42 @44
30s	33	60s	52 @54

Southern Frame Spun Yarn on Cones.

8s	18 @19	18s	21½@22½
10s	19½@20½	20s	22½@23½
12s	20 @21	24s	23 @24
14s	20½@22	26s	23 @24½
16s	21 @22½	30s	25 @25½

THE KNIT GOODS MARKET.

All hosiery and underwear during the past month has shown improving prospects. The early part of the month showed the new underwear season being gradually opened. Additional lines of union suits were shown and several mills from all accounts had also named prices on cheap balbriggans. The usual air of secrecy was evident but it was expected that the number of salesmen on the road would soon be increased. It was a matter of sentiment that the low end balbriggan must bring higher figures than at the opening one year ago and advances of 2½ cents to 5 cents a dozen were reported to represent the lowest increase from the manufacturer. Such underwear salesmen as were on the road at this time reported that the distributors were buying freely and in some cases were placing much larger orders than they did one year ago. One manufacturer is reported to have said he sold 40,000 dozen this year and while at this time last year he had only sold 28,000 dozen. This free buying in the face of the reduction in the tariff was attributed to the fact that none have a reserve stock of goods on their shelves and also that business is good in foreign countries which kept out buyers from that source of supplies.

As the month wore on, the report from underwear salesmen became more conflicting and it became evident that many of the larger buyers were in no particular hurry to place this season's orders. It became evident during this period that the longer the tariff question is held up the more uncertain will become the situation in the men's wear market. The demand for spot delivery of light weight underwear continues and while with many makers of light weights the season usually closes about the end of May, the universal demand for quick deliveries this year has forced them to continue working along these lines and goes to show how close the distributors have bought for the past year or two.

As the month closes underwear agents are reporting satisfactory business for next spring, although some buyers are showing a disposition to be cautious. There are indications that the buyers for the largest jobbing houses would like to operate but are temporarily being held in restraint by those higher up. The volume of business already placed is unquestionably large, particularly in union suits. Standard lines of suits are selling fast and some mills are already near their capacity for the season's orders. The market on cheap balbriggans is still an irregular one and one well known mill

announced recently that its line of light weight goods for next spring was practically out of the market. Knit goods salesmen report less tariff talk among their customers. The orders received for seamless hosiery for next spring are reported to be most satisfactory to many large selling agents of mills. It has been learned from a number of sources that orders for the new season has gone beyond the expectations of many members of the trade. One large house states that already its production of fine gauge goods is two-thirds sold. Prices on children's low end ribbed goods are about the same as the opening one year ago, while the advances made on misses and children's goods are about 5 cents to 7½ cents per dozen. There has been a scarcity of these goods for some time and returns to the mills are not great enough to encourage new sources of production. Offerings of good artificial silk plated hosiery are being taken and lines of seamless ladies' goods of plated artificial silk at about $3.50 per dozen are in the large request. Just as soon as the tariff clouds pass away there are general indications of better conditions all along the line.

COTTON MANUFACTURING.

TRAINING OPERATIVES.

(*Contributed Exclusively to* COTTON.)

BY WILLIAM SHAW.

The greatest difficulty that confronts most mill managers at the present time is labor.

We are often told by these managers that there is plenty of help, but mostly of foreign extraction, indifferent workers, usually dissatisfied with conditions in Europe, and consequently they come to the United States. It is said, also, that it costs from 50 to 80 dollars per operative to teach this kind of labor to run speeders, spin, or weave cotton cloth, and that after the above sum is spent, besides the time of the teacher, they never become as skillful as the French Canadian, the English or the Irish workers.

To the writer, these statements seem almost ridiculous. Why this reflection on the other nationalities? The Polander, Italian, Swede, or Portugese will, with proper training, become just as skillful as any other class of worker. In fact, in my thirty years of mill life, the best speeder tender I ever saw was a Polish girl; and the best ring spinner a Swedish boy of seventeen.

Many of our textile plants are unable to produce the best quality of goods, due to the indifferent and unskilled help, but who is to blame for existing conditions? My answer is the managers and overseers themselves, because the situation can be quickly remedied by ingenuity on their part.

The object of this article is not to criticise mill managers that are at present worried by unskilled labor, but instead to point out how conditions can be quickly remedied. In order to do this, let us now reason together and take the situation apart and examine it.

About thirty years ago when a green hand was employed, the overseer or second hand would spend some time in teaching the ignorant one the principal actions employed in the chosen operation. This practice was continued for years until almost all mill help of the larger cities, such as Fall River, New Bedford and Manchester had become efficient. Help had become so plentiful that a green hand was in almost every case refused work. Green help were for years forced to receive their first training in small places, such as West Port factory and the small towns of Rhode Island, Connecticut, New Hampshire, New York and Vermont. Town help, as a rule, prefer city life, and besides, they realize that opportunity for advancement is greater in a large city, so as soon as they became efficient they would seek work in the larger cities. So for years, it was common to see the tower of our largest mills crowded with efficient help seeking work and the practice of spending a little time with a new hand was discontinued.

Some thirty years ago, it will be remembered also, that an overseer or second hand that was able to teach a green hand was preferred to the skillful draftsman or designer. For the past few years the textile school graduate is often preferred to the experienced workman. But we find now, as in former years, that the practice of teaching a new hand is slowly creeping up again, and soon that best teacher will again be preferred to that of the skillful draftsman or textile school graduate.

The above statements may seem rather unfounded and unbelievable to many who have not considered the situation carefully, and under the circumstances, it may be well to picture what takes place in most mills when a green hand is put to work, and then picture what should take place, which will prove conclusively the statements which I make.

When a new hand is put to work at the present time, the person seeking work is seldom questioned as regards ability, and many times is put on a pair of speeders or a set of looms having received only a few days' training in another mill, and before this is discovered much bad work is made. In the case of a green hand in the card room, the person is taken to other doffers and told to doff with the other doffers.

The reader will admit that a green hand looks foolish to those that are already skillful; they cannot help it, and you will find that the doffers or speeder tender, instead of being patient, will push this poor girl out of the way. So if the girl has grit enough, she sticks to the job, and as the days go by, she learns a little each day, and adopts her own style of actions, and for this reason never becomes skillful. This is what makes a green hand costly, and as claimed by many mill pilots, never becomes skilled in her work.

The writer has trained many green hands, and if the reader is a mill manager or overseer and will follow the explanation below of what should take place when employing a green hand, I am sure that it will receive commendation.

Every superintendent should see that the overseer or second hand teaches every green hand properly. Have them study the actions required to perform a certain operation and have them convey this knowledge to every new hand. I have often made a good doffer in three days' time in the card room, and a speeder tender in less than four months, and it is well known to all practical mill men that it requires a great amount of skill and judgment to operate a pair of speeders properly.

The first thing to do when the girl is taken to the speed-

ers, is to instruct every speeder tender not to send this new girl for boxes or bobbins, for, of course, she does not know where to find either readily, and for this reason much time will be saved. Then take the girl to a speeder where the ends have just been slackened and ready to doff. First, show her how to clean the flyers by passing both hands on one flyer, the left hand on the solid leg and the right hand on the hollow leg, the hollow leg being nearest to the roller beam. In cleaning flyers, both legs should be *rubbed upwards*, for the reason that the slot or channel in the hollow leg of the flyer is wider at the top; if the flyer legs are rubbed downward, the fly will catch in the upper part of the hollow leg and this small amount of fly will bother the speeder tender when the end breaks through the set.

I have seen girls that have doffed for months that would rub the flyors downward and never knew the harm they were doing; in fact, speeder tenders seldom discover such actions, and sometimes not even second hands or overseers. This takes place in many card rooms and is troublesome to any speeder tender, therefore, such are the little things that should be told to the green hand.

Next explain to start doffing at the foot of a right-hand frame, and at the head of a left-hand frame, so that in each case the doffing operation is to the right. In removing the flyers the hands should be placed on each flyer so that each hand will be on the outside of the strand. The thumb and forefinger should rest on the boss or neck of the flyer for the reception of the spindle. The flyers should be removed from the spindles and turned inwardly, care being taken that the leg ends do not come in contact.

The latter movement should be made a few times by the girl herself, until confident that she can do it to perfection. In fine mills, as a rule, the back row of flyers are removed also. This is done so that the carriage and roller beam can be cleaned more easily and without breaking any ends. In removing the back row of flyers, *the solid leg only* should be handled. Each solid leg should be held by the forefinger and thumb and placed on top the front row of flyers already on the clearer covers so as to form an angle. The roving should be removed from the spindles to the right, and the oiling of spindles and the putting on of empty bobbins to the right also. The latter operations are very easy, and can be done at once by any green hand.

In placing the back row of flyers back on the spindles, they should be held in the same way as when removed from the spindles. The front row the same, and the best way to have a green hand remember the action, is to instruct her to take hold of the front row of flyers so that the boss of each flyer will rest on the palm of each hand; also to be sure and have the whole hand on the inside of the strand. The flyers are turned inwardly, as described, when removing them from the spindles, and when placed on the spindles both hands will be found on the outside of both strands, and when the hands are raised from the flyers, the danger of the fingers getting entangled and breaking the ends is eliminated.

The next operation is winding on the bobbin. This is abused and misunderstood more than any other operation, for the reason that the wrong way will wind the strand on the bobbin just the same as the right way. The wrong way is to raise the bobbin and pull the strand under the bobbin and drop the bobbin on the strand without winding. This is known as doffing under, and it has caused many breakdowns. Perhaps a very few mill men may not agree with the writer in making the above statement, but is it not true that a dry bobbin gear has been the cause of many breakdowns, and also the cause of slack tension? And is it not also true that cotton clogged around a bobbin gear causes the same trouble? Again, does not cotton work up on the inside of the bobbin and raise it and continue to be troublesome until the speeder tender will, from experience, blow into the bobbin? That is a common practice. Then why allow doffing under when we know that the above evils result from same? This fact should be at once impressed on the green hand, and the right way taught.

The right way to wind the strand on the bobbin is to lay the end of the strand on the surface of the bobbin with the forefinger of the left hand, and with this same finger the bobbin should be raised slightly, so as to allow the bobbin freedom to be turned, and at the same time the forefinger of the right hand should meet the forefinger of the left hand and the turns required to wind the strand on the bobbin should be completed by the aid of both hands.

When teaching a green hand to doff, it will be found that they will, as a rule, find the strand too weak; that is, not having the required skill and knowledge of how to handle the strand, they give a severe pull and break it, For this reason I teach them to give the strand a slight twist at the start, and at the same time I impress upon their mind the *direction* in which the strand should be *twisted*. On a bobbin-lead frame using Bodden flyers, the strand should be twisted three times around the presser finger, and the strand itself when given a slight twist should be twisted in the same direction as that of the strand around the presser finger. On all bobbin-lead frames, the strand should be twisted in the same direction to that of the strand around the presser finger, but of course the different make of flyers changes the number of turns required.

In many mills both bobbin-lead and flyer-lead frames can be found running in the same room. Sometimes an operative will be found tending one flyer-lead frame and one bobbin-lead frame. For this reason the greatest care should be taken when employing a new hand, that they understand the difference in the doffing operation. It should be remembered that the strand itself on all flyer-lead frames is *wound opposite* to that of the direction of the strand around the presser finger.

If the motions outlined above are taught to every green hand, it will be found that a good doffer may be made inside of a week, and that the statement of 50 to 80 dollars spent to train a green hand is wrong.

When a girl has doffed for a few weeks, then tell her to try and put in a few pieces now and then for the tenders. I often watch for an opportunity, and when I have a little time to spare, I place my best doffer on a pair of speeders, and have the overseer stay with her while I look after the room, or else teach the girl myself.

The first thing to do is to teach her the right way to creel. In creeling, the forefinger of the right hand should be placed over the strand, and the bobbin should be given a quick turn by the left hand. When the bobbin is given a quick turn, the strand is of course slackened, and the amount of slack required is measured by the forefinger of the right hand. The strand is broken and the skewer should then be held by the right hand and the bobbin placed on the creel or thrown into a box by the right hand, then the skewer is inserted into a full bobbin and brought to the left hand, where a slight portion of the strand is removed by the left hand so as to have a more wholesome portion of the strand to make the piecing.

From the above explanation it can be seen that in creeling the left hand has little or nothing to do. Impress this point on the new tender, and tell her that the left hand is used *solely* to prevent the end of the strand winding around the adjoining bobbins while the right hand is making the change from the empty to the full bobbin.

The next important point to show a new tender is the direction in which the strand should be twisted. The direction in which the strand is twisted is an important consideration, and can be quickly solved by the following test: When making the piecing, if the strand be twisted to the right it will be found that in almost every case a hard end will be made in front of the drawing rolls. On the other hand, if the strand be twisted to the left, if that portion of the strand is watched coming through the drawing rolls, it will be found that the pieced portion will be as perfect as that of the strand where no piecing or defect exists. What does the above amount to? When a tender is creeling and makes all piecings by twisting to the left, no hard ends will be made and the whole back is often creeled without one hard end coming through, while on the other hand, if the piecing is made by twisting the strand to the right, a hard end is made every little while, which in turn will sweep one or more ends down.

Now, what constitutes a good speeder tender? My answer is, knowledge and skill. The first means to know and understand the doffing operation and the direction in which the strand should be twisted in doffing and creeling; the second means the understanding of the winding-on problem.

When a speeder tender understands the proper way to creel, she has that confidence in herself and seldom goes around to see if any ends are down in front, and for this reason one end, or two, may be down for a layer or two and sometimes more. Here is where the winding-on problem should be understood by the tender. It should be explained that the surface speed of the front roll and bobbin should be equal at all times, and if a layer or two of roving is missing on a bobbin that the surface speed of the bobbin then is not enough to take up the amount of roving delivered by the drawing rolls, while on the other hand, if the broken end has run into another end, we have then what is known as "double," and the surface speed of this bobbin becomes greater than that of the front roll. Therefore, something must be done to run such bobbins with the same tension. When a layer or two is missing on a bobbin the strand should be wound around the presser finger once and the bobbin should run in this way for at least five layers, when the frame should be stopped and the number of turns on the presser made the same as on the rest of all the bobbins. When a less number of turns are wound around a certain bobbin, the bobbin should be marked in order that it can be quickly found when the frame has run a few layers, as stated above. When three or more layers are missing it becomes necessary then to change the bobbin.

If on a fine speeder, the tender will remove the defective bobbin or bobbins and remove one perfect bobbin to use to match. The perfect bobbin is used to determine the right diameter, while the defective bobbins are kept so that the distance of the cotton from the top and lower shoulder of the bobbin can be determined. When a bobbin is replaced, and the cotton is one-half inch or so from the shoulder of the bobbin, while the cotton on the bobbin removed touched or nearly touched the shoulder of the bobbin, the new bobbin should be hammered on a hard surface so as to position the cotton on the new bobbin the same distance from the shoulder as that of the bobbin removed, otherwise the strand will run under or over at each completion of the traverse and continue to be troublesome until the traverse is shortened by the taper to a point where the cotton should have been hammered.

Another defect that I would like to call to the attention of every mill manager and overseer is that of having a shoulder on the upper end of the bobbin. Why this shoulder? Why is it necessary to have a notice in the card and spinning rooms that reads thus, "Bobbins are not to be knived; the layers must be pulled off every bobbin when creeling or otherwise." I have never visited a mill but what I have found a shoulder on the upper end of every bobbin. The bobbins used by the writer have no shoulder at the upper end for the reason that I discovered long ago that it was a great help to either a good or a poor speeder tender.

When the roving is running out on either intermediate or fine speeders and no shoulder exists on the top end of the bobbin, all that is necessary is to give the few coils on the bobbin a twist opposite to the direction of the strand wound on the bobbin. In such a case, the coils become slack and they can easily be slipped from the bobbin.

There are perhaps very few overseers or managers that have done creeling, but to any that have, the above will be appreciated as a good point. It may convey to them something that they always knew, but never knew that they knew, until they see it in print.

In the ring or mule rooms, owing to the strand being much finer, the coils will offer more resistance. In such a case the surface of the bobbin should be rubbed on the sharp corner of the creel or any other part of the frame, and this will in every case loosen all the coils so that they can easily be slipped from the bobbin. The above is the only safeguard against the cutting of pieces. Therefore, instead of having a notice as described, order bobbins without a shoulder at the upper end.

It will be found also that much less waste is made, because only a very few coils can be pulled off, and for this reason the tender will allow the coils to run down lower than otherwise. Again, the tender can creel more quickly and can afford to let the coils run lower, which saves a large amount of waste. Try it!

In piecing up on the ring frame, the bobbin should be held by the left hand, and the thread found and pulled from the bobbin by the right hand. A sufficient amount of yarn should be pulled from the bobbin, say about 24 inches. The end of the yarn is held by the fingers of the right hand with the yarn resting on the face of the thumb. In this way one has the freedom of the forefinger of the right hand to find the traveler and bring it in a position so that the yarn can be easily slipped under the point of the traveler.

The learner should be told not to allow the portion of the yarn between the hands to slacken. After the yarn has been slipped under the traveler, the right hand is then raised as the left hand raises the eye-board slightly and places the bobbin on the spindle, and as the bobbin is lowered on the spindle, the fingers of the left hand should be worked to the top of the bobbin so as to hold it more firmly while the righthand inserts the yarn into the thread wire. As the finger of the left hand is now holding the top of the bobbin, the grip on same can be quickly released, and must be released quickly as soon as the thread is inserted in the guide wire. The end of the yarn should then be transferred to the left

hand, and held by the forefinger and the thumb of the left hand and the portion of the yarn extending from the forefinger and thumb of the left hand should be broken by the right hand over the left thumb nail. This insures a clean piecing, free from slubs. The forefinger and thumb of the left hand now holding only a portion of yarn sufficient to make the piecing, the yarn is brought to the drawing rolls, and the three other fingers of the left hand should rest on the clearer board, which aids the beginner in keeping a steady hand, which is necessary to insure a connection of the fibers at the drawing rolls.

I then learn them to creel as previously explained, and also the direction in which the strand should be twisted.

If the reader is a mill manager, superintendent or overseer, let him watch every person under his charge at creeling time, and he may be surprised to find the majority of his help twisting the strand the wrong way, which is toward the right. When one twists to the right, it inserts more twist, and although a hard end may not result in every case, the number, however, is large, compared with the number when the strand is twisted to the left.

I always teach a learner to work to the right and follow the sides up and down the same alley. When the learner is able to run two sides with difficulty and the work, at times, gets the better of them, I straighten them out, then I stand at the end of the alley with my watch in my hand and tell the learner to let me see how long it will take to make a round. In this way the learner will do his utmost to show in what a short time a round can be made, and thereafter has more confidence in him or herself. Thus they will unconsciously discover the fact that the oftener the rounds are made the easier the work.

As stated at the beginning of this article, the management are themselves to blame to a certain extent for existing conditions.

THE QUESTION OF RULES AND SOME OTHER THINGS.

(Contributed Exclusively to COTTON.)

BY "G. F. P."

The question of rules and regulations in the last issue of COTTON attracted my attention. I had read the article which Mr. Gulliver presented at the September, 1912, meeting of the National Association of Cotton Manufacturers, and was much interested, especially in that part where he said that "no concern can afford either to have a temporory or continuous misunderstanding with any of its employes, no matter how small the wages nor how insignificant the duties performed." The writer has worked as second hand, overseer, superintendent and agent in different cotton mills in different states, and he feels that any set of rules might apply in part to all cotton mills; but it would be better to have the location and conditions of the different concerns looked into before adopting a set of rules that are used successfully by some other mill. How often it is that an agent or superintendent is asked to do certain things in his mill that the treasurer has had put up to him by some other mill man. The conditions you are under and the help you have under you makes all the difference in the world what rules and regulations you should adopt.

The writer does not consider it good policy to post permanent notices or rules in a room, for the overseers will rely too much on them to do the work, and will not follow up from day to day the rules of their different departments. In taking charge of different rooms and mills, the writer has noticed that the ones that had the most rules on the wall were the ones that followed up their product and cleaning the least. All notices and rules of the state should be posted in requirement with the law. They should be properly framed and a glass put over them to keep them clean and so they cannot be handled by the help in the room, for they are bound to put their fingers on them from time to time to point out some particular clause, not thinking of the soiled condition in which this leaves the notice, after they have found out what they have been looking for. I once worked in a mill in Massachusetts as overseer, where every hand that was employed came to the office and got a sheet of paper on which was the rules and regulations. It was filled out by a clerk in the office and signed by the employee. Then it was taken into the mill, signed by the overseer, and witnessed by the second hand. This gave the new employee an impression of his or her duties, and an understanding of the rules and regulations of the company for which they were working. Each department had its own rules, regarding cleaning, oiling and washing up, and the amount of waste that each hand was to keep from exceeding.

It is doubtful if one could get the help in some of the different states to sign a set of rules and regulations; they would pass on to some other industry where they would not be required to sign any papers, unless a set of rules was gotten out that would be approved by the different manufacturers, and adopted by some organization like the Associations of Cotton Manufacturers, and have them gone over carefully by a committee to see that they applied to the varying conditions.

If each employee knew that he or she could not work in any of the cotton mills unless they agreed to live up to the rules and regulations of the mill they were then working in, and would be expected to give one week's notice should they wish to leave, then these conditions could be enforced. Should an employee, through temper or disregarding his agreement, leave the company without a proper notice, the overseer should not give him his bill of time or check to draw his pay, until the day after the regular pay day, and the balance the day after the next regular pay day; should an overseer discharge a hand for any reason, the overseer should give him a bill of his time at once so he can get all the money that is due him and can go elsewhere for employment. Also, if a person works his or her notice, they should be paid promptly on the hour they sever their connection with the company.

I find that rules made in the different departments are carried out by the help without much trouble unless the help are careless and the overseers have to ask them to run more work than they can properly look after, and keep up their cleaning and oiling. The writer believes that it is a bad policy to expect a hand to run more work than he or she is capable of or cares to look after. There is a lot of difference in help. Some can stand a load, others cannot. Some will lose their heads and let their work get the best of them. Others will worry so they will actually become sick because they cannot keep up or ahead of the work that is laid out for them to do.

How many overseers in cotton mills run more work than they can properly run with the help they have and think, "Well, by the time the bad work shows up in the weave

room others will be short handed and if the superintendent does not notice what I am doing, I will put up a front and run as much work as I can, and make a showing in pounds, even if the quality does suffer from it." This is wrong. An overseer should lay the conditions before the superintendent and let him see just how he is fixed. The superintendent knows what cotton is on hand and being held for just such an emergency and which order for goods is on the books that requires the very best yarns. He will appreciate the conditions if he has run a room himself; if he has not—God help you!

A superintendent that has been an overseer himself will be able to help out in some way if the overseer does not try to swing the bluff that he "knows it all," while under his breast he well knows that he has stretched long past the breaking point and that the mill will suffer on account of his not coming to the front, and laying the exact conditions bare before the superintendent. Such an overseer should remember that after all is said and done the superintendent is the man that will finally have the say whether he will be tried out another summer or not; or whether he will put an overseer in that department whom he can trust, and one that he can feel sure has all the other departments at heart as well as his own.

Now, you overseers and superintendents, just stop and think what the outcome is in the spring of the year when you begin to get short of help. We will start at the cotton before the hoppers. They are calling for some down-stairs. You are short of men the first thing, and you know there is no cotton open before the hoppers. Someone opens a bale and it is put through by itself. It might be a strict middling, or it might be a middling, or it might be middling tinged, but in any case it goes through without the proper mixing and with the amount of help you have this operation of putting in cotton from one bale at a time might go on all day, because the man cannot open up fast enough to get a mix, and you have no one to put on and give him a lift. This work goes on to the breakers, not any too good; then on to the intermediates; and from there to the finishers.

The picker boss is helping the man to open the cotton. The overseer is looking for that extra hand he has not got. And the man on the finishers has no time to see if his laps are running within a quarter of a pound on one side or the other. Everything goes. Short of card boys. Laps splitting, and no one looking after them but a temporary hand. It does not make much difference to him whether the laps are split or not. He expects to stay out at noon, so if the card sliver is light on account of the lap splitting, he does not care. There you have a combination started that will not improve. As it goes on to the drawing, you are short there, too, because the light work is breaking down, and the drawing tenders are all tired out, trying to keep work ahead for the second set of drawings; therefore, they do not piece up their ends or pull off the light work. The hands running the second drawing are trying to keep the slubbers supplied, and do not have time to piece-up all their ends unless the overseer happens to be going by looking for the "hand" who promised to show up that morning.

The slubber tenders are having their hands full. Every time an end comes down they have to go around to the back of the slubber and reach over for one side of those ends that the drawing tender did not piece-up properly, or did not piece-up at all. The slubber tender pieces-up in a hurry and makes a lot of hard piecings that will not draw on the speeders, and there is a lot of light and heavy work caused by split laps going through, so the tender cannot seem to keep her tensions right (and pray tell me who can), but she changes it as much as she can, and then calls the fixer. He changes the gear one way and finds that it is worse than before he changed it; he then changes it a tooth on the other side and it does not seem to help it much. But, after watching it for a while, he sees that the ends are not breaking quite so bad, but they are running tight. However, he cannot help that. The frame must run or the spinning will stop for roving.

There you have a case of strained roving that will make your spinning room look as if a cyclone had struck it. The ends will come down and lap on the rolls, both top and bottom, and you will have a lot of cut-yarn caused by one end of the roll being tipped-up with the broken end wound around it, and the other end will cut until it finally breaks down. The spinner tries two or three times to piece it up, and, at last, she succeeds, after breaking off a few inches of the worst of it; but there is a yard or two of cut yarn on the bobbin to give trouble all through the mill.

It seldom breaks on the spooler at these cut or weak places, as the momentum of the bobbin will carry the weak place along, but it will break down on the twisters and cause single or less ply than is required. In an ordinary cloth mill this yarn is felt the worst at the slashers, and as you all know if you do not get good slashing, you will have trouble in your weave room. So now you see, friend carder and friend spinner, there are things up to you that you can talk over with the superintendent that will keep the weave room and selling houses out of trouble.

I have digressed somewhat to make my meaning clear and getting back to rules once more, I will say that it is just as bad to have too many as not enough. I do not approve of Section 25.—"Complaints of any nature shall be taken up with the overseer first, and if no satisfactory settlement can be arranged, next with the superintendent, and finally with the general manager, but leave of absence will only be decided by the overseer of the department." From my experience with help, I think it well not to encourage them to go over the overseer's head to the superintendent or agent, by telling them that they can bring their grievances to the superintendent or agent. It will make it hard for an overseer to get the proper results from his help as they will continually insist on going over his head. An overseer should have full charge and power to settle his difficulties with his help without the interference of anyone over him, unless he wishes to call on them for advice. An overseer that is fully qualified to run a room has as much science as any professional man that has been through college; in fact, the overseer has more years of study than the man that goes to college, for he has very little time for recreation and outside pleasures. He also gets experience with his studies, for he is in practice all the time he is working up to the position he eventually fills.

A great deal of trouble in our mills is caused by men that get to be superintendents that have never run a room themselves, but, at some time in their life have been called on to keep the time for a few weeks in different departments. You will find a man of this type running in and out of the different rooms at starting time, asking the overseers how they are fixed before they have time to make what moves they can make in order to cover as much of the work as possible. An overseer from starting time until about 7:30 a. m., and from noon until 1:30 p. m., has all he can

do to direct the management of his room without being interfered with by any outside parties. If he is talking to a hand, it is bad policy to break in on him. He is probably sparring for an opening so that the hand will convict himself or herself, and then the overseer can point out the error. It might be a case of staying out without asking, or someone who wants to be changed to some other position, or perhaps some advice on personal matters at home. A good overseer will take interest in his help, both in the mill and out of it. He will be looked up to if he asks them about any member of the family who has been laid up sick, or from an accident. The help are human, and have feelings just the same as other people, and if they feel that a man is just and square with them and find that they cannot walk over him, they will do all they can for him, and try to run their work so that he will have no chance to complain, and will be glad to bring him in a new hand or learner at any time they know of anyone looking for employment.

Always try to be on friendly terms with the parents, but do not tell them that they have the worst children you ever saw. Just break it easy by saying that they are not bad children, only they have been misled, and you know if they do as much to try and make the children do their work as you will, there will be no trouble in the future with them.

It will be a more serious question in the future to teach help for the different departments since the recent child labor laws have gone into effect. A child that is left by itself after school and Saturdays while its parents are at work earning a living, becomes reckless and impertinent and when it becomes of a legal working age, it does not like to have the foreman of the different departments compel it to do certain things that will enable it to become a practical employee on the work assigned to it. Such children have the impression that too much is exacted from them, and they will either refuse to comply with the orders which they receive, or deliberaately walk out. If you take the matter up with the parents, invariably they will tell you that they do not have enough control over the children to compel them to do as they are asked, and they will want to know if there is not some other work you can assign to these wayward children that will better suit their erratic tastes. I will say, from experience, that any hand that is allowed to pick out his or her position, will never make a desirable operative. It is better to make them understand that the duties of an overseer is to engage them for the position he thinks they are best adapted for, and the position for which he needs them. In the writer's judgment, many operatives are spoiled on account of starting them in at the amount of wages that a position will pay after they become efficient. It is a good policy to start them a trifle below the permanent rate, and advance their wages according to the ability they show as they proceed. They then feel that they have been compensated for the energy they have shown in trying to master the position which has been allotted to them.

If there is any specific place in a cotton mill today that should receive the uttermost attention it is in the spooling department. Most overseers, I feel sure, will agree with me, that it is the hardest place in the mill to place a girl, as she is on her feet all day long, and has a great many unpleasant things with which to contend, especially when the carding and spinning is not running properly, or they are short of help in those departments. In a great many mills, the proper attention has not been given to the amount of spooling spindles that are actually required to take care of the spinning spindles and, in order to get the amount of yarn through the spoolers that the spinning is turning off, the overseer has to increase his spooler spindle speed. This causes a great many breakages and will necessitate the tying of a great many knots that would be eliminated with a normal spindle speed on the spoolers. The high speed takes the elasticity to a great extent out of the yarn and, as it passes on to the weaving department, it does not have the proper life, and will break in the loom and cause a loss of production and a great many seconds.

The writer wishes to compliment the person who submitted his set of rules for criticism, and feels that it would be a hard matter to introduce a set that would be more efficient or would cover the ground more thoroughly; although, as stated before, certain rules and regulations can be carried out in some places much better than in others, and for that reason it is very necessary that the conditions should be well looked into before any definite set is adopted to govern the entire cotton manufacturing industry or to be used as a standard.

QUALIFICATIONS FOR A SUCCESSFUL WEAVE ROOM OVERSEER.

R. J. SMITH, OVERSEER OF WEAVING IN HENRIETTA COTTON MILL NO. 1, HENRIETTA, N. C.

"Weaving." By this word I do not mean the dry theory of weaving, but I do mean the practical science of weaving. I do not mean to put this up as a standard, for there isn't any standard. Men will get good results from many different formulae in the preparation of warps, (such as sizing, etc.), many different ways of machine adjustment, also under various atmospheric conditions. There are many ways to manage help. Every man must use his own way, and no text book will do him any good. He must use his judgment and succeed or fall thereby.

In the manufacture of textile fabrics, no branch of the business is more important than that of weaving, nor does anything affect the desirability and selling qualities of cloth more than the weave. The material may be costly, the yarn perfect, everything done correctly in the preparation of the warp, but if not woven to suit the market for which intended, it will have to be sold as an inferior cloth. If the market demands a soft, smooth filling-face cloth and it is made hard and rough with a reedy face, then an inferior cloth is the result, and it was not the fault of the yarn, but only of the weave. If the market demands a solid warp-face, and it is made with a filling-face, again the result is an inferior cloth; and in this case also, was not the fault of the yarn or the market, but only of the weave.

A man to be a successful weaver in this advanced age in manufacturing, must have five or more qualifications. He must know the theory and practical science of warp-preparation. He must have knowledge of machinery, and the more the better. He must have a character that will command the respect of his help. He must be a student, with a mind open to suggestions, and be looking out for improvements both in quantity and quality of production as well as for the lowest cost per pound. He must be able and willing to do. He may know ever so much, but if he will not do what he knows, then he is no good and will soon lose out.

Presented before the Southern Textile Association.

Preparing a warp is not alone the arranging of a certain number of ends in the warp, but it is sizing to suit the atmospheric condition of the weave room and the kind of cloth desired. Therefore, in preparing size, first consider the number of yarn, then the number of picks of filling, and after that the face, whether hard or soft.

In making up size for print cloth, 30 warp, 40 filling, 64x64, I would use, starch 11 oz. to the gallon of water, compound 2 oz. to the gallon of water, and tallow 1 oz. to the gallon of water. I use this for any base on all numbers and picks. For fine yarn and heavy picks I can add starch, and for coarse yarn, light picks, take away.

As for the knowledge of machinery. It would be better for the weaver if he knew carding and spinning machinery as well as weaving, but by all means he should know the slasher and looms.

There is but one way to know the slasher, and that is by "practical experience." You may get some good theories from text-books, textile magazines, etc.; but without some practical experience you would be a very poor man to make up size and get warps through the slasher correctly.

If the weaver does not know the loom how can he have it adjusted to suit the cloth to be woven or how is he to keep up with the loom supplies as he should? I say, to know the machine is to get better results, and that is what's wanted.

To have a character that will command respect of help, it isn't necessary that one should be either a preacher or "near-preacher," but he should have good morals, not given to drink or profanity; and he should be ready at all times to take his part in all the religious and educational work of his town.

Therefore, he should be a natural leader of adult people, for in the weave room all the help or nearly all are full grown. It is useless to whistle and halloa at them. Simply be kind to them. I believe a man should "learn up" men for every place even to his own, and thereby create a merit system, which if used correctly will make his own work easy. But by all means he should train his loom-fixers. In that way he will never have to depend on the hobos from the road for this important place in the weave room.

As for the qualification to "be a student," this is the greatest secret of success in any avocation in life. Now, since manufacturing in the South has become a science, we must take up new ideas, and not just do as the other fellow did. We must look out for the best. Did you ever stop to think why the other fellow is not still running the room or mill you now have and ask yourself if it was not for something he was short on? If a man is not a student, he had better get out of the weave-room. For the best a few years ago has passed out. Then it was a matter of a good production and a low per cent of seconds. Now it is a good production (quantity and quality) at the least cost per pound. If you are a student you will look out for the best; and if there is a man in Texas who is getting his weaving for the lowest cost of any in the country, you will find all good mill men looking for the reason why, and they will go to see him and ask the way. Study his methods, learn from him and profit thereby. If you are not looking for the best and keeping up your leadership, improving your room or mill, some man will soon fill your place, and it is right that he should. I was once told to get the production, if it took twenty spare hands. Since being with a better mill man, I am not given such instructions, but am taught to get it at as low cost per pound as possible, and as I see it, all good managers now have the same views. Therefore, to be a student, is not to let things in your line grow old.

As for the qualification, "To do what you know," I wish I could express this just as I see it; but as I cannot, I will only say, that many times I am tempted to just, nearly do; and doubtless there are others who sometimes feel the same way. I hope I am not alone in this respect, and feel I'm not. This is one weakness of human nature, that can only be overcome by the practical application of doing the whole thing. Ask the superintendent why his weaver lost out and nine times out of ten he will say "by not doing."

I once heard a man say he could make every loom in a room run the same speed. Soon after I learned he was not "doing it" and was "losing out." He had the theory without the practical knowledge of machinery and that is the way of all the theories without the practice, it will "nearly do." The theory is good, but practical experience is better. To mix them is better still and that is what your superintendent and mine are looking for. Yes, looking for the overseer that can and will do.

Now, in closing, I wish to make it plain to you that I have given only my humble views; have left out all the text-book quotations and have given it just as it seems to me, for I think very little of a man who only gives you text-book or textile-magazine quotations; if that were all we were to hear, there would be no need of a textile association. Your invitation to me was for me to get up a paper on the weave-room and not some old quotations. These are only my personal views which are not put to you as a standard, but as a basis for discussion by other members of the Association.

A table showing the lowest wages of different classes of skilled and unskilled labor in the more important factories of Bombay on December 31, 1911, is given below:

	Cents	Cents
Skilled Labor:		
Blacksmith	30	34
Fitter	40	26½
Carpenter	36	20
Bricklayer	..	26½
Mason	..	..
Weaver (man)	..	16
Spinner (man)	..	12
Dyer	..	16
Engine driver	24	64
Boiler man	..	36
Unskilled Labor:		
Messenger	..	18
Coolie or porter (man).	14	8
Coolie or porter ..... (woman)	10	..

The North German Lloyd is increasing its South American service by the addition of four new steamers. These vessels will be the Sierra Ventana, the Sierra Nevada, the Sierra Cordoba, and the Sierra Salvada. The ships will be 9,000 tons each, and will have accommodation for 120 first-class passengers, 80 second, and 1,300 third. They will ply between Europe and the River Plate, calling at Rio de Janerio on the outward and homeward voyages. The first sailing was from Bremen on January 4.

The world's estimated production of commercial cotton from the crop of 1911 is 22,297,000 bales of 500 pounds net.

KNITTING.

COMPARISON OF PLAIN RIB, HALF-CARDIGAN AND FULL-CARDIGAN KNITTED FABRICS.

(*Contributed Exclusively to* COTTON).

BY HENRY K. DICK.

Making a comparison of these standard types of knit fabrics may prove interesting to those who are already acquainted with these fabrics and to others who may wish to extend their knowledge of knitting outside their own immediate branch of the industry. A definition will be useful to start out with and as we go further into our comparisons the definitions will become more clear.

First of all, two sets of needles are required for any of these fabrics, the needles may be placed in a variety of positions. In the flat machine we have the needles placed in an oblique position. In a circular machine we have a set of needles in a vertical position and the other set in a horizontal position. In all cases the needles work toward each other and cross so that the yarn can be laid between them.

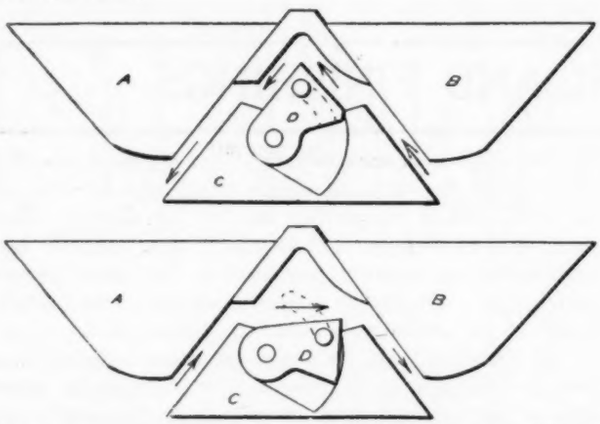


FIG. 1. LOWER DIAGRAM SHOWS PATH OF NEEDLES WHEN TUCKING. TOP DIAGRAM WHEN KNITTING.

Plain rib is formed by each needle of each set forming a new loop at every course or every traverse of the machine.

Half-cardigan fabric is formed with one set of needles so operated by cams that they will knit at each course while the other set knits one course and tucks the next, making a pattern fabric of two courses deep.

Full-cardigan is made by one set of needles knitting while the other set is tucking and *vice versa* at the next course, this pattern also being two courses deep.

An examination of plain rib will show that the fabric is the same on both sides, there being really no right or wrong side.

Half-cardigan will show on the face of the fabric, a long loop with a shorter loop alternating with each long loop, this short loop being almost entirely hidden from view. The back of the fabric will show an even long loop. There only being half the number of loops showing on the back of the fabric that are showing on the face.

Full-cardigan has the same appearance on each side, being similar in this respect to a plain rib, but with the wales being much deeper and more pronounced.

For plain rib knitting, both sets of needles are operated in the same way, that is, the needles are raised so that the old loops are down underneath the latch of the needle and while in this position the needles receive the new yarn to form the new loop. As the needles are drawn down by the cams, the new yarn being held in the hook of the needle, the old loop closing the latch of the needle passes off the head of the needle, allowing the new loop to be drawn through the old loop. This movement is performed by every needle individually, but so rapidly that it might be said that a row of loops are formed at one time.

To change from plain rib to half-cardigan, a different movement must be given to one set of needles. If the machine is a circular one, the dial needles are operated to make the change of stitch. In our definition we said one set of needles knit at every course, while one set knits and tucks at alternate courses. The tucking of the stitch may be done in either of two ways. The better way, and this is the method adopted in almost every flat machine, is by use of cardigan cams. By using this style of cam, see Fig. 1, the needles can be raised just high enough to take the new loop, still retaining the old loop, and at the next course casting off both loops as one. In the other method, shown at Fig. 2, which is used largely in circular sweater machines, the needles rise to their normal height to receive

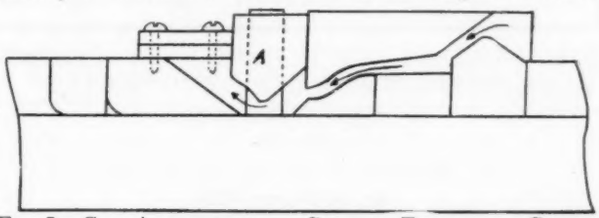


FIG. 2. CAM ADJUSTMENT TO CONTROL TUCKING OF STITCH BY THE SECOND METHOD. ARROWS INDICATE THE PATH OF THE NEEDLES.

the new loop, allowing the old loop to come below the latch, but in being drawn down, the needle is not drawn down far enough to allow it to cast off the loop. The loop being held on the head of the needle above the latch. In this case we have one loop above the latch and the other loop is inside the needle hook. The resultant stitch is the same, the method used making no difference.

Full-cardigan is a step further than the half-cardigan and is made by operating both sets of needles, one set tucking the stitch while the opposite set knits and at the next course the action on the needles is reversed.

The use of the cardigan cams in making either of the half-cardigan or the full-cardigan stitches, gives greater facility in controlling the size of the tuck stitch. Where the tuck stitch is formed on the head of the needle and above the latch, the size of this tuck is limited to the diameter of the needle at that point.

In knitting these different stitches on the same machine, with the same yarn, some interesting comparisons were made. The contraction of each fabric, for example, taking the width of needles in the machine as the standard of 100 per cent. The machine contained 5 needles to the inch and 50 needles were taken to knit the samples. The

yarn used was 3/18's worsted, a normal stitch was taken in each sample. This size yarn being correct for this gauge machine making full-cardigan work, but on the light side for half-cardigan and plain rib.

In the first table shown, it will be seen that the plain rib contracts quite a little more than half-cardigan. It would not always be possible to make two sets of samples the same because of the length of draw by the cams, the tension applied to the yarn when going into the machine, and the take-up on the fabric. If the tension of the take-up is extremely light, the contraction of the fabric will be greater. Under normal conditions interesting data could be collected by the knitters themselves as they change from one class of work to another, or to different yarns. Some yarns will contract more than others so that there is no end of interesting matter which the knitter could collect and which would be beneficial to him and allow him to change from one class of work to another with the least possible trouble.

TABLE 1

	Plain Rib	Half Card.	Full Cardigan
Area of fabric knitted from same length of yarn	32.03"	28.43"	30"
Contraction of fabric	37.5%	12.5%	none
Rounds of knitting per inch	8	11	12
Wales per inch	8	5.7	5
Inches of yarn fed to needles per round	70"	80"	75"
" " " " " " "			
square inch of fabric	44.8"	50.16"	45"

TABLE 2

Contraction of fabric	30%	2½%	slight gain
Rounds of knitting per inch	6	8	8
Wales per inch	7	5	5
Inches of Yarn fed to needles per round	86"	90"	75"
" " " " " " "			
square inch of fabric	36"	36"	30.40

The second table given shows results from a 5-needle per inch machine using a 5/18's worsted yarn. This yarn is an extremely heavy yarn for this gauge. As the yarn increases in size a longer loop is made, thus giving less contraction to the fabric.

The uses of these stitches in combination with each other will be readily seen, for example, a sweater sleeve knitted seamless, has plain rib for the cuff where the fabric is desired to fit tight, then in order to get the wider portion for the rest of the sleeve, a change of stitch is made from plain rib to either half-cardigan or full-cardigan. A ladies vest is another example where a combination of stitches is used to give the necessary shape to the garment.

The use of these different fabrics has an influence on the size of the machine to use for different garments, a much wider fabric is obtained from a full-cardigan stitch, a little narrower fabric from a half-cardigan and the narrowest fabric from a plain rib stitch. Again we can use a heavier yarn for the plain rib, a little finer yarn for the half-cardigan and still finer yarn for the full-cardigan.

DYEING, BLEACHING AND FINISHING.

DISCHARGING PATTERNS ON PRINT CLOTHS BY THE USE OF NITRATES AND NITRITES.

(*Contributed Exclusively to* COTTON).

BY ERNEST STUTZ.

Freiberger's process of using nitrates and nitrites in cotton print discharging, particularly of indigo dyed material, has the merit of recognizing the valuable improvements, economical as well as technical, to be derived from the use of these agents and overcoming the very great difficulties that intervened between mental realization of this fact and its practical accomplishment on an industrial scale. The block printer had used nitric acid thickened by gum water and pipe clay, but oxy and hydrocellulose were the almost unavoidable concomitants of such procedure.

Careful theoretical work, however, led to valuable observations regarding the behavior of dilute nitric acid and nitrous acid in watery dilution in the presence of sulphuric acid and results were arrived at by which it was recognized that the discharge action was not derived from the free nitric acid, but from the lower stages of oxidations of nitrogen, nitrous acid, and hyponitrous acid, or more particularly from nitrosyl sulphuric acid resulting from their solution in the sulphuric acid.

The further fact that neither nitric, nor nitrous acid need be used in the free state, but are equally effective when freed from their salts by sulphuric acid, led to a method of operation as practical as it was simple.

For the protection of the undischarged indigo ground against excess of nitric acid, Mr. Freiberger uses various simple means. Not only could the thickener of the print color be utilized to carry reagents into the sulphuric acid which would also act as developers of the color by reducing the nitric acid in the cutting vat, but the reducing effect could be intensified by the addition of cheap organic substances, such as woodwool and rags, so that ample protection was afforded for the undischarged parts and the brilliancy of the ground color was left undiminished.

On the other hand, the danger of oxy or hydrocellulose was provided against by observing the effect on the cotton fiber of varying degrees of concentration of sulphuric acid at varying temperatures, and it was found that by controlling the interrelation of concentration, temperature, and time exposure, perfect discharge effects were obtained between 67 and 91 degrees Tw. without reducing the strength of the fabric.

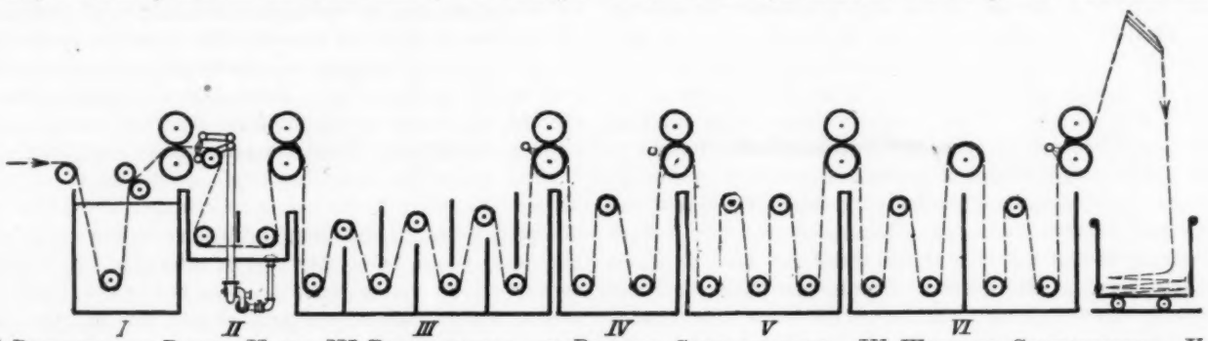
The cotton fiber naturally becomes somewhat tender on being brought into sudden contact with concentrated sulphuric acid, but the strain does not produce anything worse than the stiffening which is also observed in mercerization, and which is completely relieved in the neutral reaction during the process of washing. Analogous conditions may be observed in bleaching, or in printing with strong colors containing caustic alkali, for instance Schlieper & Baum indigo color (consisting of indigo thickener and lye), where the goods after washing recover more than the strength they previously appear to have lost.

In the nitrate discharges, in the course of operations following the acid treatment and while passing through the specially designed squeezing rollers, the goods have to withstand considerable tensile strains, but in spite of this, even the finest cambrics show no traces of injury. Furthermore, it was demonstrated by numerous tensile tests at independent and official testing laboratories that nitrate dis-

charged fabrics showed at least 5 per cent greater strength than the undischarged parts of identical goods treated by the best oxidation discharge (steaming method).

By a combination of all these observations, formulas were worked out, giving the proper relation of monohydrate content in the sulphuric acid, temperature, and time exposure, on which the success of the operation depends. To simplify the control of these three elements it was necessary to devise suitable mechanical apparatus for carrying through the reactions in the most economical and efficient manner.

The goods are made to move uninterruptedly through a series of tanks roughly resembling the arrangements for the chromate process, but entirely dispensing with the steaming apparatus, and come out of the final dryer ready for finishing within half an hour of being printed. They pass through the cutting vat at the rate of at least a yard a second, are freed from the adhering acid, cooled, sprayed, washed, and undergo neutral reaction in dilute alkali, are washed again and dried. The circumferential speed of the guide rolls regulates the time of passage through the six separate compartments, and the speed of the entire process is only limited by that of the cloth washer. In Europe



I DEVELOPMENT BATH. II AND III REGENERATION AND RINSING COMPARTMENTS. IV WASHING COMPARTMENT. V DILUTE LYE. VI WATER.

capacities of 40,000 yards per 10-hour day are not uncommon.

The labor force necessary to supervise and regulate the entire operation is limited to two men, once the head of the first piece is passed, by means of a copper wire or cord, into and out of the sulphuric acid tank. This operation formerly required a certain amount of steadiness and smartness and as a rule a helper was called in to assist in it for a minute or two, lately a mechanical device has been perfected which renders the operation quite simple. In the entire time since the process has been in use in Europe, in large as well as small works, (over ten million yards having so far been treated by this process) not a single case has been recorded where a workman suffered injury through attending to the details of the process. Neither is there any risk to the goods through unforeseen circumstances. Were anything to happen, for instance the power give out, the part of the piece in the cutting vat at that particular moment would be destroyed, but no other part of the piece would be affected and the damage would be confined to only three yards, that being the distance over which the goods come in contact with the acid.

The acid tank (compartment I in the accompanying illustration) is fed with heated acid of the necessary strength in the manner hereafter described. This tank is provided with a lower guide roller running on slide rod bearings so as to be easily raised and lowered. The adjustment of this guide roller in its parallel and horizontal relation to the other guiding elements, is of the utmost importance. The material carries along with it some of the acid out of this tank, but is now relieved of a great part of it by being squeezed between two rolls, the upper one elastic, being all rubber and provided with compound bearings, and the lower one being rubber coated.

As at the speed with which the piece travels, the squeezing impact would be in the nature of a hard blow, two smaller lead rolls—pre-squeezers—are placed between the acid surface and the squeezing rolls. The goods carry these along towards the larger rolls and by the tractive effort as well as the squeezing effect relieve the larger ones of an appreciable part of their work. The pre-squeezers likewise counteract the tendency of the print color to run along the material in an opposite direction which would interfere with the clearness of the design. The course of the goods from the pre-squeezers to the large rolls is at an easy angle upwards, so as to avoid the formation of tongues and lakes. It will be readily understood that, if the acid passage had destroyed the fiber, cambrics and other light goods could not stand such treatment. In a properly constructed apparatus there is no danger whatever for the goods. The rolls must be washed with water at the end of each day's operation to keep them in good order; goods, of course, must be sewn together so that no knots pass between the rolls.

After passing the squeezers, the goods have first of all to be thoroughly cooled; this is done by spraying them from perforated pipes placed below as well as above them. The material at this stage is not permeable enough to allow of cooling from above alone, although the passage through the next compartment sets this right. The sulphuric acid at 82 degrees Tw. being capable of dilution without heat development, there is no risk of heating the material during the spraying. Each of the pipes is controlled by a separate cock, so that the extent of the dilution of the sprayed acid is accurately controlled.

The acid removed from the goods drops into compartment II, which is an important element in the economical disposition of the process. About 25 cubic inches of acid may be said to be carried away from compartment I by every pound of material. Most of this drops into tank II and is here put into circulation in a manner similar to that customary in mercerization lye recovery. For that purpose, a small lead lined rotary pump is installed close to and below the tank. As the spraying and cooling acid comes from the more dilute acid of the later tanks, the concentration of the recovered acid may be regulated according to requirements at between 14 and 30 degrees Tw. The pump forces the acid back to the storage tank, where it

grades the technical acid to the strength required for the cutting vat. This storage tank being placed above the cutting vat and communicating with it by a direct pipe which, in its turn, is heated by lead coils communicating with the water system, a constant supply of the acid of the requisite strength and temperature is automatically assured.

The next two compartments (III and IV) serve to entirely remove what acid may still have adhered to the fabric. They are therefore provided with partitions alternately reaching from the bottom up to nearly the surface of the liquid, and from the surface level to near the bottom of the tank. The liquid at the same time is made to move in the direction opposite to that of the goods. The length of these two tanks need not exceed 4 yards. The washwater in the goods here shows only a very slightly acid reaction and as the goods pass out, it is seen that the fiber has quite recovered its suppleness and softness.

For the alkaline bath which now follows (compartment V), dilute caustic soda or silicate or soda may be used. It removes the products of reaction from the white parts and the yellow tinge given to the indigo ground during the acid passage, so that the final blue is exceedingly bright and fully equal to the best obtainable by the bromate process. The apparatus can be divided into two parts, by making the alkaline treatment a separate operation; it is simpler, however, to combine the entire process in one machine.

The indigo has from 6 to 10 per cent greater color effect than with other well known methods, as the alkaline solutions of nitrogen oxygen combinations, unlike the chlorine oxygen combinations of the chlorate process, in no way injure the brightness of the indigo ground. Of course, the essential requirement as regards appearance of a perfect discharge is that the white should stand out clear, pure and sharp from the blue ground. For optical effect the white should actually appear to be the ground color. The nitrate discharge shows up a pure white without the least traces of blue, and the blue ground by contrast has a beautiful bright aspect. It owes this effect to the preparation of the print color where, by extensive dextrination of the starch, the gummyness of the print color is increased and deep penetration into the fiber is facilitated.

Starch gets a clear, gum-like appearance by mixture with nitrate of soda, and it is further disintegrated to the consistency of gum by means of acetic or formic acid. Sulphate of barium paste is also added, or in case of fine patterns, flour, tragacanth or some leiogomes. The baryta paste improves the surface white and acts as an accumulator for the nitrous gases to prevent their escape before completing their discharge action. It further enables the production of neater effects as the edges of the engraved lines cut the color better and the imprint stands out more clearly. Also at the printing machine the pattern will show up on the blue ground and will facilitate supervision. A large part of the paste is dissolved by the sulphuric acid or drops off during the washing operation, but an appreciable quantity stays on the discharged white places.

The cost of the process consists of the print color, lost acid, wages, and steam consumption for heating acid and for motive power. Print color costs very little as crude saltpeter, the same as used for fertilizer, can be employed, by dissolving in water, filtering, and perhaps cutting with a little acid before mixing and boiling with starch. In Europe, the price varies between one and a half and three cents per pound according to the depth of the Indigo ground. The color keeps for weeks and injures neither the goods, nor the back cloths. It prints with a simple pattern roller all day long, does not clogg the pattern, attack the pressure drum or the doctor blades. There is no risk of pale or faint grounds due to the scratches as in some methods, that show up too late for steaming.

Wages are for two men whose responsibilities do not differ greatly from those in chromate discharging. They regulate the temperature before and during operations. Every supply tank of acid is checked once a day with the aerometer and experience has shown that the temperature can be maintained without difficulty during several hours operation.

The recovery, regeneration and reuse of the acid has been studied with particular care, as it is of some importance in the economy of the method as a whole. A supply of 400 gallons is sufficient for a full day's production; no acid need ever be removed from the cutting vat, but remains constantly ready for further use. In a good apparatus, a recovery of over 90 per cent of the acid used may be counted upon. One quarter to one third is brought back at once to grade the technical supply as previously mentioned; the remainder can either be diluted as required for other purposes, or the regeneration process can be set at a definite proportion. A reservoir of a capacity of less than 500 gallons at about 14 per cent Tw. was found sufficient for the temporary storage in a works with a production of over 20,000 yards a day. From here the distribution is effected, through a small phosphor bronze injector, to the various departments where the acid can be used again.

The dilute acid contains small quantities of organic matter and of nitrogen-oxigen combinations which are distinctly useful in bleaching and it is so employed on light and heavy goods, before bowking or after chloring, whether mercerised or non-mercerised. Bleached white goods so treated are suitable for dyeing or printing by the most delicate methods. The recovered acid can be used in the souring of Indigo resists, of plain vat dyed materials or of mercerised white goods after soda lye treatment and in the dilution of about 1 degree Tw. it is clear as water.

The ideal method to obtain the greatest economical advantage from the process to so arrange the work that on any particular day the number of pieces to be discharged should correspond to the acid consumption of the other departments. This counsel of perfection however in no way limits the economical advantages of the process. Even in the extreme case where none of the acid except that used in regarding the supply can be otherwise employed, the cost will still be much lower than the oxalic acid sulfuric acid baths. Where the latter are diluted and low oxalic acid strength is made up for by expensive chromate color, oxycelllulose is more liable to appear in the chromate white and besides the cheaper oxalic acid solutions give inferior results as regards the brightness of the white.

The cost of this process is greatly in its favor, being hardly ever less than half that of the most economical competitor and only a small fraction of that of the more expensive ones. The risk of failure is entirely negligible as in the case of accident the machine stops of its own accord and only the 3 yards in the cutting vat are lost. Supervision is not essentially different from that elsewhere entrusted to reliable workmen and to practical men means no greater responsibility than passing cotton through fire in singeing or exposing it to caustic soda solutions under pressure during bowking. In the case of error in printing, washing in water will so clean the goods that they can be

printed over again, and delays either before or after discharging are without bad effect.

Printed goods and printed back cloths can await discharging operation indefinitely, and unbleached as well as white goods can without risk be used for backcloths. They can be kept in any part of the mill or if particularly exposed to moisture, nitrate of potash may be used in place of nitrate of soda. The white discharged places remain unchanged during storage and retain their uniform whiteness and even in special patterns, where the white discharge was almost an inch wide, no trace of either oxy or hydrocellulose has been discoverable.

The application of the process is, however, by no means confined to the white discharge, but wonderful results are obtained in the blue, red, and in the resist and discharge colored styles. Finally, colored grounds other than blue can be discharged with red and other colors.

Nitrates being very soluble in water, the very finest patterns on the deepest and fastest dyes will come out extremely well and an excess of discharging agent may be dissolved in the color.

All kinds of cotton fabric lend themselves unreservedly to the treatment. Neither the concentration nor the nature of the dyeing vat; neither the depth of the ground shade, nor the extent of mercerisation have an influence on the success of the method which in two years actual use on a large scale in several European countries, at large as well as small works, has distinguished itself by fastness and brilliancy of colors, strength and durability of fibre, and last but not least, exceptional uniformity of results.

THE MANUFACTURE OF ARTIFICIAL SILK FROM COTTON.

(*Contributed Exclusively to* COTTON).

BY H. R. CARTER.

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In preparing cotton for solution by the Glanzstroff process, the material is mercerized by treating 100 parts with 1,000 parts of a solution containing 30 parts of sodium carbonate and 50 parts of caustic soda. It is then boiled in a closed kier for three and a half hours at a pressure of 40 pounds per square inch. The following is a description of the process and plant employed. Fig. 4 shows two open sheet iron reservoirs A A each of 440 gallons capacity. These reservoirs are connected together by a pipe. Near them is a vertical heater C in which is a steam coil connected with the boilers. Between AA and C is a centrifugal pump D which connects the two reservoirs with the heater by a pipe. The heater is itself connected with a kier B on the same level as C but of larger diameter. In these reservoirs is a solution of carbonate of soda and caustic soda, 66 pounds of carbonate of soda in each reservoir besides 112 pounds of caustic soda for every 220 pounds of cotton. The lye thus prepared is passed through the heater C by the centrifugal pump D and is raised up to a high temperature by the steam passing through the coil. The pump working constantly the lye fills the heater and passes by the pipe X Fig. 5, into the kier B where it is mixed with the cotton as it is thrown in (110 gallons of weak lye to 1 cwt. of cotton).

When the kier B is full of cotton and lye, the pump D is stopped. The kier has a flanged and hinged lid which can be tightened down to the flanged rim of the kier by means of bolts and thumbnuts. A packing ring enables the kier to be thus hermetically sealed. Steam is then allowed to enter the kier and the cotton boiled for 3 to 3½ hours at a pressure of 40 pounds per square inch. A thermometer may be fitted in the lid of the kier so that the temperature may be kept constant. The kier should also be fitted with a safety valve and a pressure gauge. The lid of the kier should also carry a pipe provided with a cock which is left open for a moment to permit of the escape of air and surplus lye when the lid is let down. A perforated false bottom and lid and sometimes even an intermediate perforated plate, holds the cotton in place

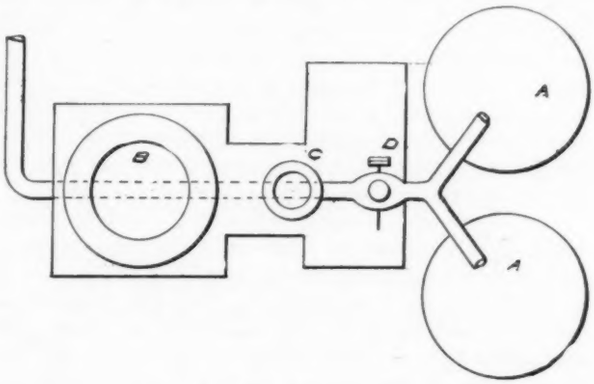


FIG. 4. THE MIXING PLANT.

while the lye is circulated through it by the pump which is again put in motion, the lye passing by the pipe TT from the kier B into the heater and back again into the kier by pipe X, passing through the layers of cotton and is again drawn through the pump P, and so on.

When the operation is finished the cock on the pipe D, Fig. 5, is shut, cutting off the steam to the kier and the lye is run off by the cock R. The lid of the kier is then raised and its contents washed by water which is allowed to run through it. Then a man lifts out the cotton with a fork and puts it in wicker baskets placed around on a

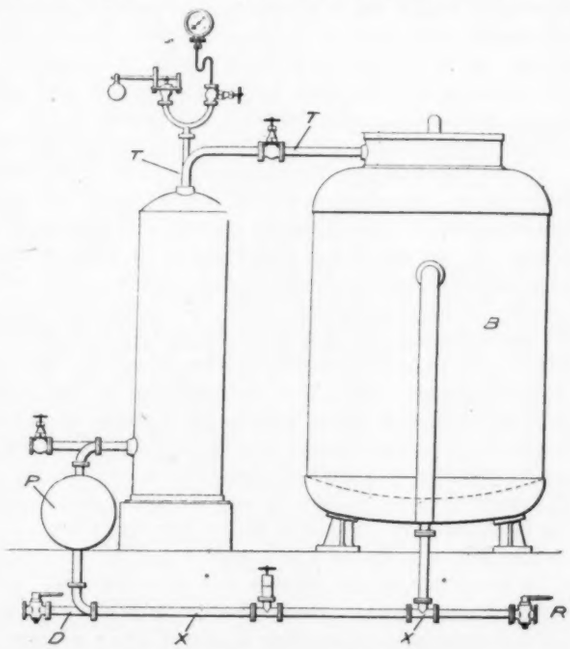


FIG. 5. THE KIER AND HEATER.

platform which for convenience surrounds the kier. The cotton is then put into a wooden reservoir and is passed to a washing machine in which it is well swilled with fresh water and finally falls into another wooden reservoir. The cotton then passes to a hydro-extractor with copper cage. A few minutes suffices to free it from water. The cotton is then dried and passed through a cotton opener as used in a spinning mill with the object of opening out the fibers. Such a machine will open sufficient cotton to produce 7 cwts. of silk per day.

The cotton should be bleached. To do this it is put into earthenware reservoirs containing a weak solution of bleaching powder of chloride of lime prepared beforehand in an electrolyser, (37 pounds of chloride of lime in 110 gallons of water). The cotton remains for 5 to 6 hours in the stone trough in which it should be stirred up from time to time. When this operation is finished the cotton passes to a washing machine, falls into a wooden reservoir and is finally passed again through the hydro-extractor. While the hydro' is working, water is poured into the cage for five minutes so that the cotton is thoroughly washed.

A method of bleaching the cotton which may conveniently be employed by those using the cupro-ammonia process on a small scale consists in boiling 112 pounds of cotton for five hours in a pressure kier with caustic soda lye at 3 degrees Tw. at 40 pounds pressure per square inch. The material is then washed for half an hour in the kier being afterwards removed to a vat in which it is soured for 45 minutes in hydrochloric acid solution at 1¼ degrees Tw. Repeated washings in pure water then follow. The cotton is then chemiced in chloride of lime solution at 1½ degree Tw. for 1 hour, two washings in pure water following. Another sour follows during 20 minutes strength ½ degree Tw. After this sour the cotton must be thoroughly washed 6 or 7 times and then passed to the hydro-extractor.

The bleaching room should have a cemented floor slightly sloped so as to allow water to flow off. The process in Herr Gladbach's factory was said to be to charge the cotton with soda lye under considerable pressure and then to wash it out in a wool washing machine provided with paddle propellers. The cotton was then bleached with chloride in lead lined becks, then soured with sulphuric and hydrochloric acid, then washed in washing machines, passed through a hydro-extractor and stove dried. A safer method is to boil with soda lye, wash, extract and dry.

In the manufacture of artificial horse hair from cellulose solution, the cellulose should first be converted into hydrocellulose by heating for 30 minutes with hydrochloric acid at 12 degrees Tw. The material is then washed, hydro-extracted and air dried. An alternative method is to convert the cellulose into hydrocellulose by heating with a strong solution of caustic soda of mercerising strength, but without any bleaching process in order to prevent the oxidation of the cellulose. The hydrocellulose is then freed from as much moisture as possible by pressing or is heat dried. Or the cellulose may be converted into hydrocellulose by steeping in a weak solution of zinc chloride, say at 10 degrees Tw., to which acid may be added and heated. The bleaching may precede or follow this operation.

The first step in the nitric acid or gun cotton process is the conversion of the cellulose into nitro-cellulose. This is done in earthenware vessels of about 9 gallons capacity. About 9 pounds of cotton waste is stirred into a mixture of 30 quarts of sulphuric and nitric acid and left to stand for 5 hours. Under the action of the acids upon the cellulose, colorations are produced which under polarized light vary from gray, green, yellow and orange, violet and blue. The blue color must be reached to produce good spinning solution. The percentage of nitric acid required for the conversion of cellulose into collodion cotton pyroxylin varies with the quality of the cotton. With American cotton the percentage of nitric acid must be higher than when the Egyptian is used. A fair average of the mixture may be taken to be, sulphuric acid, 620 parts; nitric acid, 170 parts, and water, 210 parts.

Wood cellulose for the preparation of artificial silk by

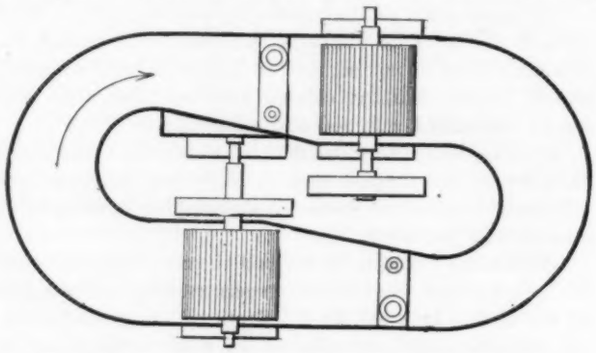


FIG. 6. PLAN VIEW OF DISINTEGRATING MACHINE.

the Viscose process may be purified or prepared by boiling 3 to 6 hours under a pressure of 30 to 45 pounds per square inch with solutions of alkali carbonate of ½ to 2 per cent strength with or without the addition of caustic alkali or alkali sulphide.

The next part of the viscose process is the mercerization of the cellulose. The wood pulp is well beaten in a hollander and pressed into cakes containing 50 per cent of moisture. These cakes are then broken up, put into an edge runner and ground up, a strong caustic soda solution being added. A chemical compound known as alkali

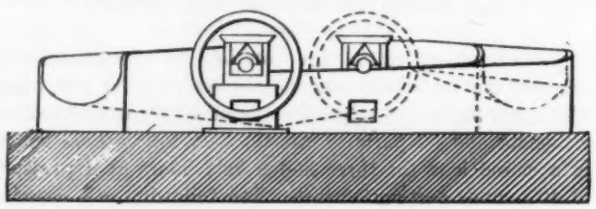


FIG. 7. ELEVATION OF DISINTEGRATING MACHINE.

cellulose is thus formed. This mercerized product is stored in hermetically sealed jars and kept at a low temperature until required for the preparation of the solution.

To manufacture solution by the Theile method it is necessary to cut in or disintegrate the bleached cotton. This is best accomplished in the wet state and with water in the hollander as used in paper mills. Such a machine is shown in Figs. 6 and 7. It consists in a large oblong wooden tub with circular ends and a fixed piece running down the center, thus forming an oval race or channel. It may be 14 feet long by 7 feet wide by 3 feet deep, giving a capacity of 1,250 gallons. There is a slight fall in the bottom to one end where there is a discharge opening. A copious supply of water should be available from an overhead supply pipe with cock. The cotton is cut up short or disintegrated by a roll fitted with gun metal blades which almost touch a bed plate built up of similar blades close together.

(To be Continued).

Practical Problems Discussed by Cotton's Readers

We invite our readers to make use of this department for the discussion of any and all problems arising in the mill or the finishing plant. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so indorsed. This department is open to all.

SOME WEAVING QUESTIONS.

EDITOR COTTON:

I would like to hear from some of your readers who have worked or are working on denims and tickings, and I am submitting herewith a few questions which are not mentioned in any textile works that I have access to, and on which many textile men disagree. I will be very grateful to hear from some of your contributors who have followed up this subject.

Is a moving whip roll an advantage on medium heavy or fine work, and if so, why?

How far should a whip roll be set from the harness on denims or tickings?

Is it an advantage to set the whip roll close on heavy goods?

In running 5/1 or 2/1 warp faced tickings or denims, is it not a disadvantage to run the whip roll above the level?

Could denim be made to advantage by weaving it face down?

Can this method of weaving face down be advantageously applied on ticking 4/1 or 3/1?

Student (Connecticut).

DOES IT MAKE CUT WORK?

EDITOR COTTON:

"The Bystander," in the February issue of COTTON, asks does it make cut work for the cone on a fly frame to run out of true?

In reply to this, I will say that the power is transmitted by the top cone through the cone belt to the bottom cone, thence on through a train of gears through the differential motion to the bobbins, whose circumferential speed decreases in proportion to the increase of their diameter. Their surface speed corresponding with the surface speed of the front roll, less a small percentage allowed for the contraction of twist in the roving. This speed being regulated by the cone belt whose position on the cone is changed every time an additional layer of roving is wound upon the bobbins.

The top cone is a driver and generally is the one to get out of true on the shaft. The fact that a cone is running out of true does not produce cut work in my judgment if the cone will remain in the proper place of the shaft and in exact alignment with the bottom cone, so it is not noticeable on the tension of the ends, as any effect an out of true cone might cause is counteracted by the train of gears and the usual amount of back lash in the differential motion. But, remember, I said if the cone will stay in the proper place on the shaft and in exact alignment to the bottom cone, which is seldom the case, for generally two things are sure to occur sooner or later—generally sooner. The cone will become loose on the shaft which will cause all the ends to slack down, which causes more or less loss of production and bad work, or the cone will gradually work towards one end of the shaft where it will be out of alignment with the bottom cone, therefore giving to it the wrong speed, which will cause the frame to either run with too tight or too slack a tension, producing more or less strained work. This can all be traced back to the top cone running out of balance, and it is only a question of a very short time until this constant throwing or pounding motion will produce the above effects.

Ga.-Ala. (Alabama).

A CAUSE FOR BOBBIN DIAMETER VARIATION DURING THE WINDING-ON PROCESS

EDITOR COTTON:

I would like to ask carders interested in this department if they ever had the following experience on fly frames?

The writer has been a carder the most of his life with a few years as superintendent, and in this twenty-five years of mill experience, has noted at times that the bobbins as they filled varied much in diameter, that is, some increased in diameter faster than others. I have noticed bobbins, especially on the intermediate frame, which on the completion of the set, lacked four or five layers, while other bobbins were so full that the surface touched the leg of the flyers. I had a great deal of trouble years ago with this evil, and I thought I would give my remedy for same. If any other reader knows a better way, I am sure that all concerned would welcome it.

When this trouble was first brought to my attention, I at once examined the presser fingers to see that the roving was wound the proper number of turns around them. When I found the proper number of turns on all the presser fingers, I next thought the trouble was in the diameter of the strand, so my next move was to size the roving. To my surprise, I found very little difference, but was amazed to find the bobbins of a larger diameter the lightest.

To make a long story short, from my many tests and also from experience, I found the trouble to be in the stock. Some mills must get their share of fluffy cotton, and fluffy cotton will cause the above trouble, for the reason that from the picker room to the finished drawing sliver, the strand is not condensed the same as wiry cotton. Therefore, when it is put in at the back of the slubber it appears bulky, but is in most cases lighter than a strand made from wiry cotton, which appears less bulky.

On the slubber the twist is seldom one turn to the inch, while it is not common to find two turns on the intermediates. The only reason I can advance for fluffy cotton giving more trouble on the intermediate is (1) because two full rovings are more liable to be put in together, as in most mills they have the custom of creeling all the creel at the same time, which to the writer appears to be a very bad practice, because a full bobbin creeled with a half-full bobbin does not only help the above trouble, but also helps to remedy any variation in the strand; and (2) the inter-

mediate roving is quite bulky, and at the same time has enough twist inserted to the inch to condense the strand somewhat. However, at the present time, the instant I discover the above trouble, I insert a tooth of twist. I have found this to be the most effective and quickest way out of it.

I need not tell the readers of COTTON that when a bobbin increases faster than the rest of the bobbins and whose speed is governed by the true outline of the cones, that it stretches the strand. This trouble is of course multiplied by the number of bales put in the mixing. There is a tell-tale to this trouble, and you will find it in the spinning room.

After doffing a ring frame running filling yarn, if a great many ends come down until the set is one-quarter full, you can make up your mind that the trouble is in the roving being stretched, either by the above trouble, or by a tender tightening the tension or having the wrong tension gear on the frame. Wash. (New York).

SOME QUESTIONS FOR "WASH" AND OTHERS.

EDITOR COTTON:

Will you kindly submit the following questions to the readers of your practical discussion department?

(1) How can I keep the flats of my cards clean?

(2) Why are fly frames of some makes weighted lighter than others?

(3) How could you set the top rolls on the slubber, intermediate, fly frame and ring frame, running the following hanks and yarn: 1.00 hank on the slubber, 3 hank on the intermediate, 7 hank on the fly frame and 40's yarn on the ring frame? I am using 1 1-4 inch stock and over.

(4) How would you proceed to find defects in the cloth, say when you can detect with the naked eye bunches in the yarn; also nebs, dirt, etc?

A New Subscriber (Massachusetts).

WHERE DO THE EXTRA TURNS COME FROM?

EDITOR COTTON:

The reading of some of the answers to the question of "A. C." were to me very amusing, but only go to show that many writers take things for granted and are either conceited about their own knowledge or do not go deep enough into this study to prove their statements. "Wash," in the May number, makes the statement that the fact of the roving breaking because of the number of turns around the presser is all "twaddle;" if he will only take the time and trouble to test this out he will find that he is the twaddler.

The statement of "Quality" is all true, and goes to show that he is a student, but he does not answer the question asked in any sense.

"H. E. W." makes this statement: "I think the reason that the roving was much harder and the sliver stronger was due to the tension caused by the extra lap around the presser, thereby condensing the fibers more closely together, as we all know that the closer the fibers in the sliver are laid and twisted, the harder they are to separate or draw apart." Now, how is it possible to have fibers laid closer together and twisted by *tension*? Tension, as I understand it, causes the strand to stretch, not twist.

I have been thoroughly interested in this subject, so much so that I have personally communicated with "A. C." in an effort to find out just what his statement really covered. He informs me that on mules in his room roving that had been wrapped around the presser four times would not draw through the rolls, while the roving wrapped three times was all right. This was all made on the same frame under the same conditions.

To further prove the question to my own satisfaction, another carder and myself have made a test. This test was made on one frame making 4.65 hank roving from 1 1/16 inch cotton. The twist constant was 108.46; using a 36 twist gear, we have 3.0127 turns (calculated). The following table shows the results of this test on a twist tester made by John Nesbitt, of Manchester, England. We took 20 stretches from each bobbin, each 8 inches long. We spent 18½ hours making this test:

	Two wraps Around Presser	Three wraps Around Presser	Four wraps Around Presser
1.	22.	23.	23.5
2.	23.5	23.5	26.
3.	22.	24.75	22.
4.	22.75	23.	25.25
5.	23.	22.25	23.
6.	22.	22.75	23.25
7.	23.	23.5	25.
8.	21.25	24.	24.
9.	23.	24.5	24.
10.	23.5	22.	25.
11.	23.25	22.25	25.
12.	22.75	24.25	24.5
13.	23.25	23.25	24.75
14.	24.	24.	23.
15.	22.	23.5	23.75
16.	22.	23.	22.5
17.	22.	23.5	22.25
18.	22.25	23.25	24.25
19.	21.	23.	22.75
20.	23.5	23.	24.25
	452.00	466.25	478.00

Reducing these results to twist per inch, we have:

$452 \div (20 \times 8) = 2.825$ average turns per inch with two wraps around the presser.

$466.25 \div (20 \times 8) = 2.914$ average turns per inch with three wraps around the presser.

$478 \div (20 \times 8) = 2.9875$ average turns per inch with four wraps around the presser.

We do not care to add to the gayety of nations by writing or causing others to write sarcastic comments, but we would like to have some one tell us *where the extra turns come from.* "Carder," (Massachusetts).

EDITOR COTTON:

Reading over the different answers to my question, "Where does the twist come from?" in COTTON for May, it has occurred to me that a good many of the answerers did not understand the question, or if they did understand it, they did not take the time to think it over, but took it for granted that it must be all "twaddle," because they had seen no rule to cover that point. "Wash" says that the fact that I mention a twist testing machine is a confession

that I have never used one, and then proceeds to recommend a "thinking cap" for me which, according to his own reasoning must be a confession that he has never used one of those necessary articles.

In order to demonstrate my position, I made a test in the following manner: I took three bobbins and put them on a speeder making 4.50 hank. On the first bobbin, we will call it bobbin A, I put two turns around the presser. On the second, bobbin B, I put three turns around the presser. On the third, bobbin C, I put four turns around the presser, and then ran the speeder until the bobbins were about half full. I then brought them over to the twist testing machine and made the following tests: Eight inches of roving was tested at each time. Thirty tests from bobbin A gave an average of 2.87 turns per inch. Thirty tests from bobbin B gave an average of 2.91 turns per inch, and thirty tests from bobbin C gave an average of 2.98 turns per inch.

The facts are there for all, and does not that prove there is more twist in one than there is in the other? Now, you carders, don't say it's all "twaddle" before you try this yourself. Do not take my word for it, but prove it yourself and you will perhaps wonder "Where the twist comes from?"

"A. C." (Massachusetts).

EDITOR COTTON:

In reading over the question by "A. C." and the numerous replies thereto, it has occurred to me that perhaps the twist didn't *come from* anywhere, but that because of the additional wraps, it did not lose so great a percentage of twist, as was the case with fewer wraps.

Take the case of "Carder," the advance proof of whose letter you so kindly showed me; he shows a theoretical twist of 3.0127, while the actual twist as indicated from his tests dropped off steadily from his four-wrap test of 2.9875 to his two-wrap test of 2.825. It is probable that if he had run a five-wrap test, it would have been no better than the four-wrap figures, while a one-wrap test would doubtless show up much worse than the two-wrap figures.

The reason for this, as I see it, is because the fewer wraps he uses, starting from his four-wrap standard, the softer and more bulky the roving becomes. Because of this additional bulk the bobbins fill faster and take-up a trifle more than the roll delivers, thus stretching the roving slightly and thereby reducing, by just that percentage of stretch, the twist per inch. It would be interesting to test the twist on, say, a two-wrap bobbin for twenty tests in the middle of the bobbin, or when it is half full and then run it off by hand down to the first four or five layers for an average of twenty tests.

"Quality" says the twist "goes," and he is right, in a way. "A. C.," "Wash.," "Y. L. Y.," "Ga.-Ala.," "Carder" and the others are all doing good work in bringing this subject out in detail, and the very fact that two practical carders were willing to devote 18½ hours to a practical test to demonstrate their viewpoint, is only one indication of the interest being manifested in this department and the subjects discussed therein.

Young Student (Georgia).

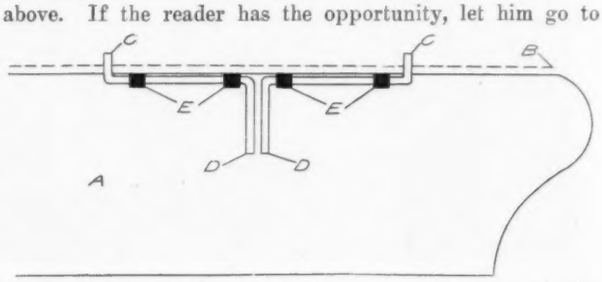
A KINKY FILLING DEVICE.

EDITOR COTTON:

The troubles caused by kinky filling are too well known to need description. It is safe to say that there are few mills that do not have thousands of yards of cloth made unmerchantable by this most annoying trouble. Some mills build large bins so as to fill them with the filling yarn just doffed from the mules or ring frames, and the yarn is then dampened by sprinklers over every bin. Other mills have what is known as a yarn tower. Others leave the yarn in the yard through the night. However, the most common method used in moistening the filling is by putting the yarn in a steam chest, and steaming the yarn gradually.

This latter method is all right and gives good results when the yarn is steamed gradually, but in many cases the yarn is literally boiled, or at least that is the effect on the coils on the surface of the cop or bobbin. When cops or bobbins are steamed and given to the weavers immediately, (which seems to be the practice in most mills), it often results in a large amount of waste. In case of the bobbin filling, the bobbin swells and the hole for the spindle in the bobbin is, of course, made smaller, and will not go to the bottom of the shuttle spindle. For this reason the bobbin is brought too close to the point where the yarn is drawn from the shuttle, and the weaver, in order to prevent the yarn from breaking, will pull off the necessary amount. This makes waste.

The same trouble is experienced with cop filling, although very few will accept this as true. I would like to have the skeptical ones make the following test to prove the above. If the reader has the opportunity, let him go to the mule room, pull off a cop, and then wet the spindle. It will be found that it is impossible to position the cop as low down on the spindle as before.



When you take the filling out of the steam chest and give it to the weavers immediately, the tube on which the cop is built is of course damp and offers the same resistance as described above. Again, filling is much softer after steaming, and appears the same as when made from fluffy cotton, and for this reason, many cops find their way to the waste box.

The writer has a very simple device of his own which can be very quickly understood by referring to the accompanying sketch.

It will be found that this device will prevent kinky filling, and besides, after once it is attached to the lay of the loom, will require no more care or alteration. A represents the face of the lay. B represents the path of the filling over the race plate. The two C's are two short wires that extend over the lay and are struck by the fell of the cloth at each beating-up action. The two D's are the other ends of the wires which serve to bring the short ends back to a perpendicular position when the lay is leaving the face of the cloth. The two E's are small staples or any other pieces of metal which will fasten the wires to the lay, and at the same time give the wires freedom to oscillate. This device can be attached to any loom, and it can be seen that the cost is little or nothing.

Wash (New York).

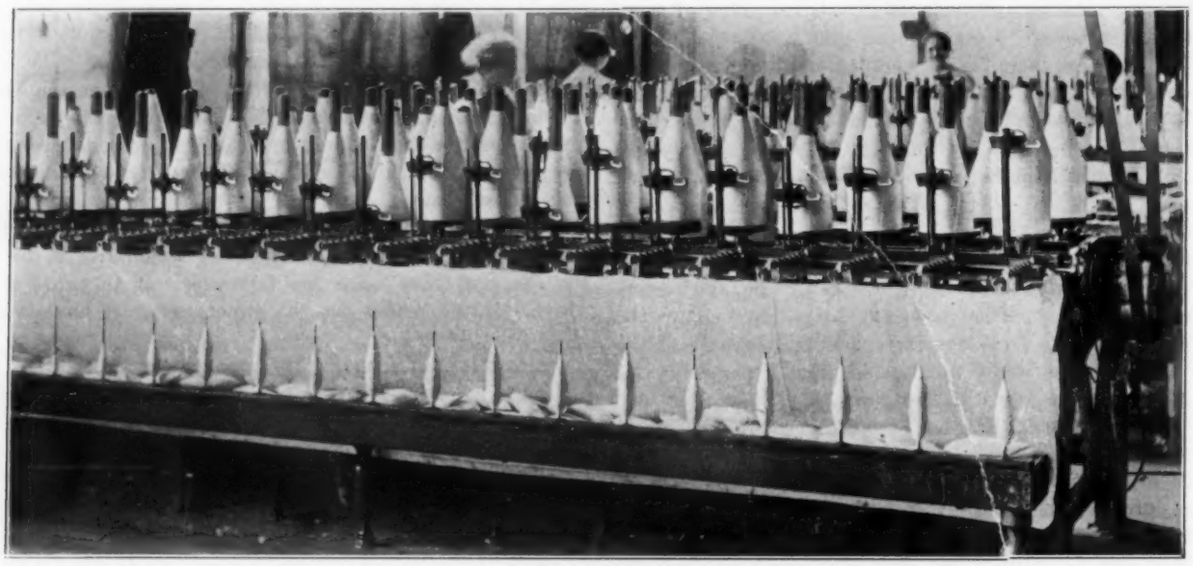
NEW MACHINERY AND TRADE NOTES.

THE JENNINGS YARN CLEANING MACHINE.

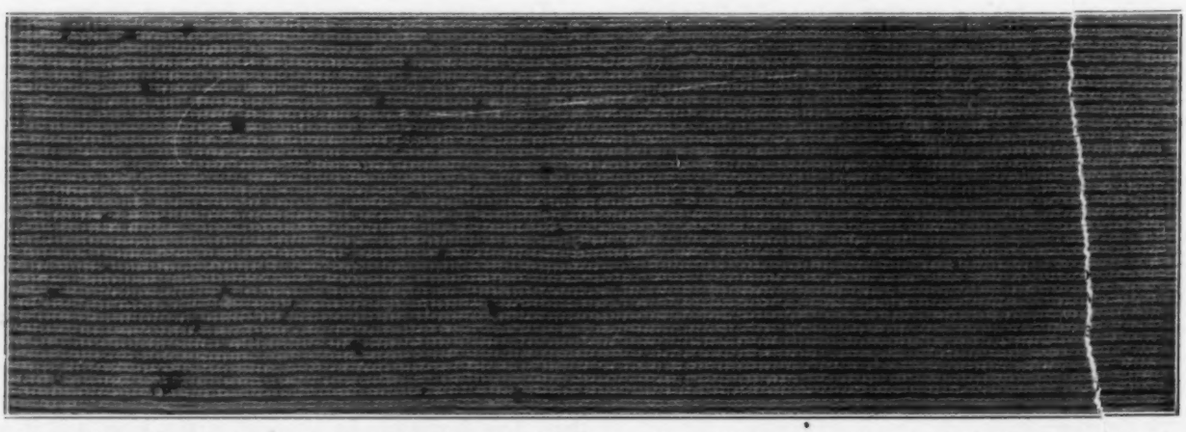
This new yarn cleaning machine, manufactured by the R. G. Jennings Yarn Cleaning Machine Company, Elmira, N. Y., removes specks, lumps and other foreign matter from yarn. It grips and detaches the speck or lump from a running thread of yarn and promptly feeds it into the speck bag below. This is believed to be the first machine ever made to clean yarn in this way. The inventor has been granted a basic patent in this and foreign countries covering any means for removing foreign matter from a running thread of yarn by gripping process. These cleaners clean so well that in making knit underwear, hosiery or cloth intended to be dyed or made up in the grey, it is unnecessary to bleach the goods or use combed yarns to get rid of the specks. As a result, a very large saving is effected. It is also claimed that a lower and cheaper grade of cotton can be used in yarns cleaned by these machines, and that yarns so cleaned are improved in quality and knit or weave with less trouble and fewer holes, thus making a large saving in seconds and cost of cutting.

It is a simple machine to thread, requiring practically only two motions. After a little experience a girl will wind as much yarn through these cleaners as in the old way, and in all cases where the winders have been run slowly they can be speeded up with perfect results. All working parts are made of steel and hardened. The machine is adjustable wherever necessary and can be set to clean any size of yarn without scraping or causing needless friction.

The machines may be attached to any kind of winder and are used in the regular process of winding or spooling. The yarn is controlled by regular tensions and guides made of porcelain and passes between thin curved sickle shaped pieces called blades. These blades are placed in pairs and rest on curved bed pieces which are adjustably mounted on a frame piece at regular intervals. The yarn as it passes between the blades touches the beds. The beds are adjusted so that the blades touch them only at their forward edges, and so form V shaped slots, in which the specks are caught.



THE YARN CLEANING MACHINE AS APPLIED TO WINDERS.



THE LEFT-HAND END OF THIS PIECE OF FABRIC WAS KNIT FROM YARN WHICH HAD NOT BEEN CLEANED; THE OTHER END FROM YARN CLEANED BY THE JENNINGS MACHINE.

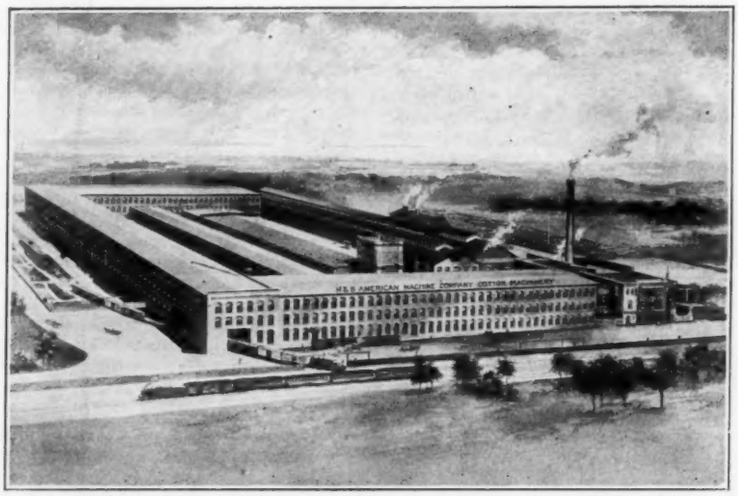
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.,
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

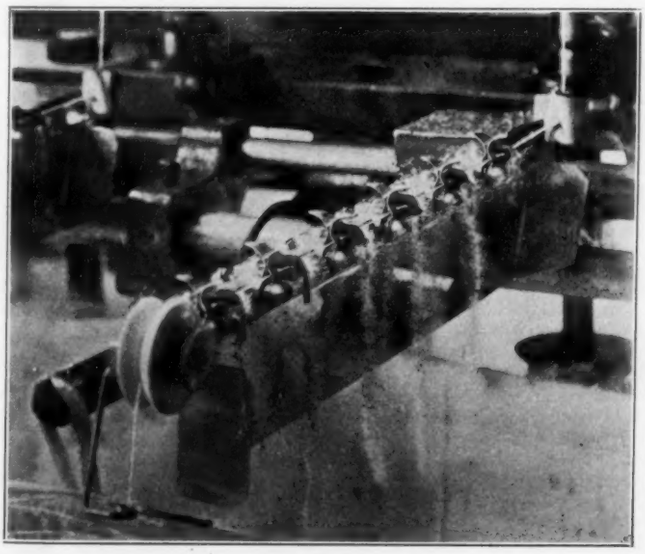
With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

At intervals the blades are lifted slightly from the beds, allowing the foreign matter which has been caught to feed down into the speck bag below. The blades are bent away from each other at the top so that the operator has only to place the yarn between the porcelain tension discs at the outward end of the frame, and then into the guide at its inner end. The yarn will then slip down between the blades automatically.

The blades are provided with means for moving them together or apart, so as to accommodate different sizes of yarn and do away with unnecessary friction. The rocker or lifting action provided for the blades is operated by power obtained from the winder by means of a small round belt. The power thus obtained from one belt being sufficient for a battery of twenty cleaners.



A SINGLE SECTION OF THE JENNINGS YARN CLEANING MACHINE ATTACHED TO WINDER.

These cleaning machines cannot be tampered with or opened up by the operatives, thus insuring good work at all times. They are furnished completely equipped with the necessary castings, cop box legs and speck bag ready for attachment to any bobbin or cone winder, and the manufacturers will send one of their experts to superintend the first installation. Ten-pound sample lots of yarn will be cleaned for those interested so a comparison may be made with the same yarn before and after cleaning.

The American Directory of Hosiery and Knit Goods Manufacturers of the United States and Canada for the year of 1913 has just been issued. This directory contains maps showing the location of mill towns, together with lists of manufacturers classified according to goods made; manufacturers' selling agents for knit goods; an alphabetical index of manufacturers; New York knit goods buyers; jobbers handling knit goods; a list of dyers, bleachers and printers making a specialty of knit goods, and department stores and large retailers buying knit goods. This is the 31st Annual Directory of Hosiery and Knit Goods Manufacturers published by the Lord & Nagle Company, 144 Congress street, Boston, Mass. Copies of this directory will be sent postpaid for $1.50 a copy upon application to COTTON, Atlanta, Ga.

BEWARE OF THE I. W. W

Just one year ago this month COTTON printed an editorial under the above caption and warned manufacturers what to expect. That the year's history has borne out those prognostications is indicated by the following extract from a published letter by Eben S. Draper:

Some of the phases of the prolonged strike now in progress at the works of the Draper Company have seemed to me to be worthy of careful study and consideration.

This strike, which started the first day of last April, and is still going on in full force, was by some seven or eight hundred men out of substantially 2100 or 2200 at work in the entire plant. These men who struck were scattered through various departments, but the bulk of them came from the foundry department, including moulders and helpers, and from the so-called 'snagging" department.

One very pronounced and peculiar phase of the trouble is the fact that of all the men who struck, there were comparatively few who could speak the English language, and there were not more than thirty who were American citizens. The great bulk of the men who struck were Italians and Armenians.

The strike in Lawrence was almost entirely of non-English speaking people, comprising Italians, Greeks, Armenians, etc., most of whom had been in this country a very short time.

Soon after the end of the strike in Lawrence, men who had been affiliated with this movement began to come to Milford, where there was a large settlement of Italians, and began to preach the doctrines of the I. W. W. organization and endeavor to form a union of that order among non-English speaking employees of the Draper Company. This was kept up persistently for many months, and among others who spoke at Milford at different times, were Mr. Ettor and Mr. Giovanitti, the Italian leaders of the great strike in Lawrence, as well as several others well known to be members of that organization who had been connected with the Lawrence strike.

The most persistent person, however, among all those urging the organization among the Draper Co. employees was a man by the name of Coldwell, who was a photographer located in Milford, who had been in the town for some two or three years and who spent a large part of his time urging the employees of the Draper Co. to organize in the I. W. W., and preaching doctrines of socialism; while he had ostensibly left town to be a resident of the city of Worcester, two days after the strike started he returned to Milford and became the leader, and stayed in that position for something like six weeks.

Some of the principles of the I. W. W. ought to be stated. In the book which contains the preamble and the constitution, as well as the "tactics and methods" or methods of the I. W. W., the following statements appear:—

"The tactics used are determined solely by the power of the organization to make good in their use. The question of 'right' and 'wrong' does not concern us."

"No terms made with an employer are final. All peace, so long as the wage system lasts, is but an armed truce. At any favorable opportunity the struggle for more control of industry is renewed."

The organization does not allow any part to enter into time contracts with the employers. It aims where strikes are used, to paralyze all branches of the industry involved, when the employers can least afford a cessation of work; during the busy season and when there are rush orders to be filled."

"Failing to force concessions from the employers by the strike, work is resumed and 'sabotage' is used to force the employers to concede the demands of the workers."

"In short, the I. W. W. advocates the use of militant 'direct action' tatics to the full extent of our power to make good."

These quotations are sufficient to show the aims and objects of the I. W. W. "Sabotage," as is well understood, is the destruction of property by men at work who are supposed to be loyal and efficient employees of the concern for whom they are working.

"Direct action" means the use of violence and intimidation and actual destruction of property, and sacrifice of life if necessary to bring about the results.

We had no great difficulty in establishing in the minds of all unprejudiced observers the fact that the strike was managed by the I. W. W. organization, and when Mr. Ettor and Mr. Giovanitti came to Milford with various other people, and made speeches and said, frankly, that it was an I. W. W. strike, all doubt as to this point disappeared.

Mr. Coldwell, who, as I have said, was the leader of the strike for some six weeks, maintained persistently that he was not a member of the I. W. W. organization, and he said that it was not an *I.* W. W. strike, but he failed to convince the people of the correctness of his views. Mr. Coldwell was a socialist, and had been a candidate for state office on the socialist ticket, and had been a speaker at local affairs around the state of Massachusetts for some years in favor of socialism.

At this point it is interesting to show the connection between the I. W. W. in this strike and the socialists as a political party. The strike had been going on only a comparatively short time when Mr. Morrill of Haverhill, the one socialist member of the Massachusetts legislature, went before the Committee on Rules, with an order requesting the appointment of a legislative committee to investigate the conditions in Hopedale, and the conditions of employment which existed in the Draper Company. The Committee on Rules appointed a hearing, and Mr. Coldwell, the socialist leader of the strike, went before the Committee on Rules, making an argument to bring about this investigation. He was the only person from Milford or Hopedale to appear at this hearing asking for the investigation, denied the fact that it was an I. W. W. strike, or that he was one of the I. W. W. organization, and tried to get the Committee to order an investigation. The Committee refused to recommend the matter to the legislature.

Shortly after this time, and early one morning, when men were being forcibly prevented from coming to their work by some of the strikers, a conflict arose between the strikers and some special police officers who were trying to protect the workmen. Shots occurred on both sides, and one of the strikers was killed. This created great excitement, and was most unfortunate, although the judge who conducted the inquest has since decided that the police officer was undoubtedly acting within his legal rights.

Within two or three days of this unfortunate occurence, there was a meeting of the I. W. W. held in Boston, at which an address was made by a minister from the town of Ware, Mass., by the name of Sawyer. In his remarks he referred to the strike at Hopedale, and condemned the Draper Company and the Drapers, but said that it remained "for Eben S. Draper (meaning myself) to give the lasting blanket of disgrace to his family; his arrogant brutality toward his employees will place him in a position where he will stand forever disgraced in the eyes of fair minded men. Thugs in the employ of Draper have shot in the back, in deliberate cold blood, the father and husband demanding decent treatment."

It develops that this Mr. Sawyer, who made this speech referred to, was a candidate for Governor of the Socialistic party in Massachusetts during the last campaign.

The strike at Hopedale has been attended by many acts of violence and intimidation. One car was "shot up" by four armed men, who stepped out of ambush and wounded one man badly, and put the lives of many innocent people in danger. People have been assaulted on their way to work; innocent men and their families have been threatened; and many acts have been committed by large bodies of men which are absolutely unlawful, and absolutely against the principles of American citizenship.

Within the last two or three weeks it has become plain that many meetings for the direction of the strike in Hopedale and Milford have been held in rooms and headquarters of the Socialist party in Boston. Several prominent Socialist members of the state have been in consultation at these rooms, including Mr. Morrill, the legislator from Haverhill, where the means and methods by which the strike should be conducted have been talked over and decided on. Collections have been taken up by them in different sections to help support the strikers in their fight against the Draper Company.

Recently in Boston several socialist ministers of the Unitarian denomination, to which I have the honor to belong, met and, according to report in the Boston Transcript, adopted a resolution urging the Draper Company to arbitrate their differences with their employees.

I do not refer to this matter except to bring out the fact that they were "socialist" ministers, and that the other people to whom I have referred were also socialists.

It therefore seems to me to be absolutely plain that the strike which is being carried on in Hopedale at the present time, is a part of the political propoganda of the Socialist party; that they are using the I. W. W. as their arm of "direct action," to create trouble and make dissatisfaction with governmental as well as industrial conditions, so that the change in government, which they advocate, may be brought about.

I believe that of the 700 non-English-speaking men who are on strike at our place, more than 600 believe that they are striking for changes in conditions of wages, while as a matter of fact they are being used by the I. W. W. for their personal ends, and the I. W. W. in connection with the Socialist political party, is using them in a brutal and cruel attempt to advance their own political principles, which aim at the destruction of society as at present organized, and complete change in governmnet

Among the men who are on strike, there are many who have

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obtained jobs from other people, or in other sections, so that they might support their families, or that they might go somewhere else to live and work. In all instances where it is possible, these socialist and I. W. W. leaders have made these men give up their jobs and come back to become loafers in the town of Milford, so that they might be more effective in bringing about the defeat of the Draper Co. in this controversy. It certainly does not hurt the Draper Co. more to have these men loafing than it does to have them working for others, but it is cruel to the men, and hard on their families, and is apparently indulged in, in accordance with the old theory that "the devil finds work for idle hands to do."

I have written this long statement to try to make plain to the people what I believe to be the facts—that this strike was organized by and is being carried on by the I. W. W. as an organization; that this organization is an instrument of the Socialistic political party; and that three-quarters of the men who are on strike would be glad to go to work, under the conditions and wages that they formerly had, did not their leaders in the I. W. W. organization and the Socialistic political party, use that influence to prevent them.

BOOK REVIEWS

All Books Reviewed Under This Heading May Be Procured From COTTON at the Published Price.

INTERNATIONAL TARIFF RELATIONS. By Samuel Guyton McLendon. 140 pages. Numerous tables. Published by the author. Price, $1.50 postpaid.

The first constitution of the United States was the Declaration of Independence, and when it was agreed by that Declaration of Independence that the representatives of the United States in general congress assembled, had full power to levy war, conclude peace, contract alliances, establish commerce, and do all other acts and things which independent states may of right do, the states from that time on ratified the constitution and the national voice which forever obliterated the state sovereignty of which we hear so much.

In the introductory chapter of his book, Mr. McLendon brings forth these facts and then takes up the Constitution of the United States as it was finally embodied, showing the reasons for the various compromises. Then follows a discussion of the development of American commerce and the influence exerted upon same by the two powers of Congress to regulate commerce with foreign nations, and levy taxes, duties, imports and excises.

In the next chapter the protective policy in the matter of custom regulations is taken up, and the Madison tariff of July 4, 1789, discussed. Two years after the enactment into law of the Madison tariff, the first tariff board was appointed by a resolution of Congress. Mr. Jefferson submitted his report in 1793, and the details of this report are given in comparative fullness in this chapter. Between 1789 and 1812 a number of other articles besides those specified in the Madison bill were added to the dutiable list. These are described and the author continues that in 1812, at the beginning of the second war with Great Britain, Congress passed a law increasing by 100 per cent all tariffs then in force and provided that this increase should continue in force until one year after the conclusion of peace.

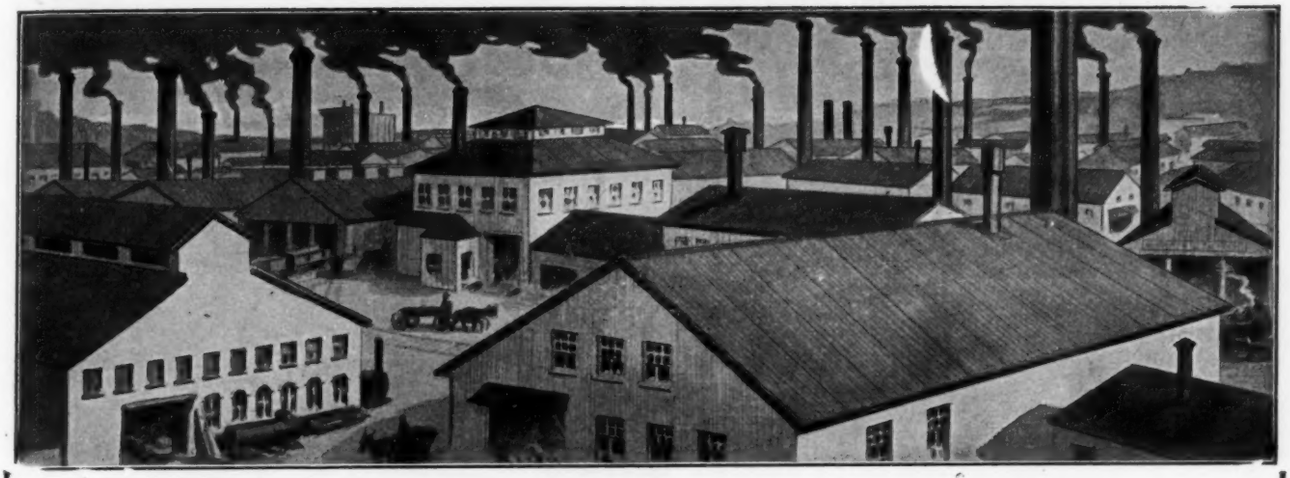
Chapter 3 follows closely the conditions outlined in various messages by the president during the succeeding year and analyzes the conditions which led up to the tariff storm of 1828 to 1832. He then follows the compromise tariff bill offered by Henry Clay in 1833, and shows the resulting effects through the ensuing years. As an example of the enhancement of values under a protective policy, Mr. McLendon cites the increase in the total value of slave property returned for taxation in Georgia in the four years, 1856 to 1860. This amounted to $92,000,000. The total value of slave property returned for taxation in Georgia in 1860 was in round numbers $302,000,000, against the total value of land including towns and cities of only $196,000,000. The author continues on in detail during the years preceding, during and succeeding the civil war and then in Chapter 5, takes up protective features in modern tariff and commercial regulations.

One dominant note stands forth throughout Mr. McLendon's argument, and that is that no intelligent study of the customs tariff can be made of one country unless there is taken into view the customs tariff of all countries carrying on commerce with that country whose import duties are under investigation. Throughout Chapter 6 he shows comparative tariff figures with various countries of the world and emphasizes the export values of cotton manufactures, sent out by the leading countries to the world's markets as compared with those of the United States. These figures, he says, are startling. What do they mean? What is the remedy? Will a reduction in the tariff on cotton goods imposed by the United States add to its competitive power in the markets of the world, or will the reduction of that tariff increase the competitive power of foreign countries in the American home market? He states that by foreign protective tariffs, by cheaper labor cost, by lower investment cost, or for some other reason, the American manufacturer of cotton finds himself excluded from the markets of the world. Then he asks, pointedly, will it help the cotton grower to take away from the American cotton manufacturer the only market he has for the output of his mill?

Chapter 7 is entitled, "Irreconcilable Conflict Between Jefferson and Underwood." In this chapter the author has dealt almost entirely with the textile schedules, and shows by a number of tables the violent fluctuations in mill dividends and the uncertainty of investment in such properties. He also shows that the earning capacity on a number of mills over a long period does not sustain a charge of enormous profit nor overcapitalization. He backs up these statements by figures from Lancashire mills as given by Mr. Tattersall and also by the London Economist, and shows conclusively that American manufacturing establishments are not overcapitalized; that they pay small and irregular dividends, and that the market value of American mill stocks is very little above the book value. Nearly all of the figures given by Mr. McLendon in the tables and referred to in the discussion are for Eastern mills. The reason for this is doubtless because of the longer period of time which they have been operating, and which will, therefore, allow the author to make longer term averages than is the case with Southern mills. However, as indicated in a recent editorial on this question in reference to Southern mills, there are more Southern mills that are undercapitalized than that are overcapitalized.

In Chapter 8 are discussed a number of sectional facts without sectional color, while in Chapter 9 he continues the discussion on subjects of especial interest to cotton manufacturers.

The conclusions of the author as indicated in the book are epitomized by the following quotations from the last chapter of the book: "Tariff regulation on a protective basis is possible, and practicable; and it was this kind of



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Some of these imitations look like RU-BER-OID but that is merely on the surface. The roofing buyer cannot see what is underneath, or he would not be fooled in buying goods on their appearance only.

As a house built on a poor foundation cannot last, neither can a roofing founded on poor material give the service expected of it.

Take None but the Genuine

RU-BER-OID

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The permanently colored prepared roofing

The ideal roofing for Bungalows, Cottages—in fact suitable for any building where artistic effect is desired.

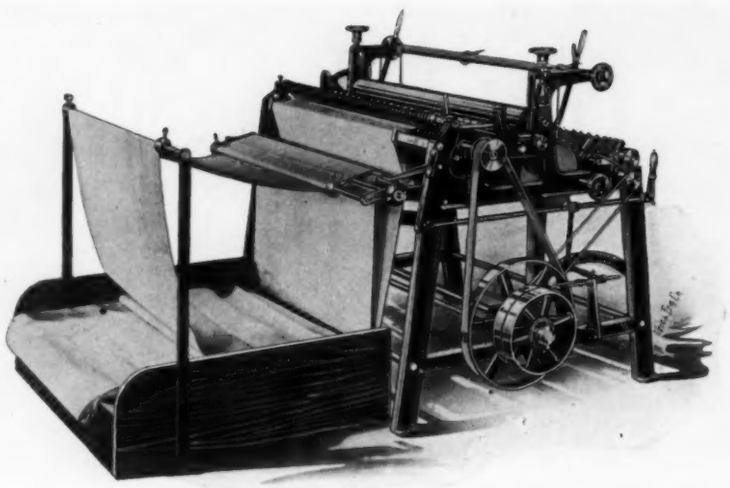
The Standard Paint Company,

100 Wiiam Street, NEW YORK

BOSTON, CHICAGO, DENVER.

regulation which the founders of the Republic favored, in order to avoid foreign dependency, and in order to save the American consumer from exhorbitant profits made by the foreigner, when the foreigner had the fixing of the selling price. Low tariff, or no tariff, in the United States, means the conversion of the United States from a selling nation into a buying nation."

Mr. McLendon's book will be read with great interest at this time when all cotton manufacturers are watching carefully the effects of the present administration's efforts to revise the tariff bill into a tax for revenue only, which is not a tax for revenue only at all, but something entirely different.



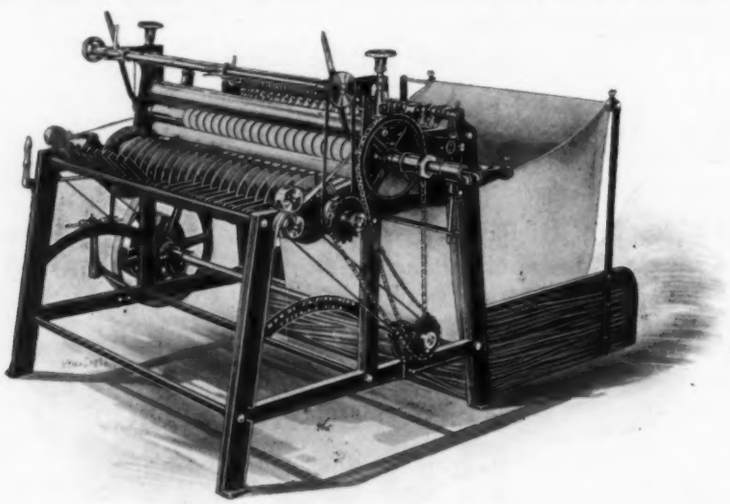
AN INTERESTING MACHINE.

What is known as the "20th Century" cloth cutting, folding and winding machine has been very recently put on the market for the cutting of any kind of woven fabric, folding the edges and rolling it up in one operation; or it will cut and roll up the cloth without folding the edges. The machine is also adapted to cut knit cloth in the tube into various widths to be used for collarette or shoulder straps. The machine, by cutting and folding in one operation, enables the manufacturer to get from one to two more strips out of a bolt of cloth than is possible with the old method of cutting, and also does in one operation what is now being done in two. For trimming off the selvage on this machine, it requires from 3-8 to 1-4 inch on the side, or in other words, out of a bolt of cloth it usually gets from 35 1-4 to 35 1-2 inches. With the old method of cutting it was almost impossible to get more than 34 inches out of a bolt. Then it was also necessary to turn in 1-4 inch on the side, while it is claimed when cutting cloth on this machine it is only neecssary to turn in 3-16 inch.

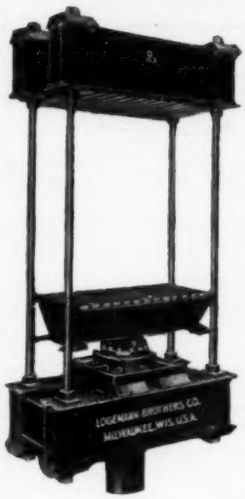
Every piece is cut and folded perfectly. When cloth is to be cut 2 inches wide, with the old method of cutting it was possible to get only *seventeen* strips if same was finished 1 1-2 inches when folded. By cutting it on this machine *eighteen* strips will be secured to finish 1 1-2 inches, and still have 1 3-8 inches left so it will enable the manufacturer to get some other smaller width if he desires. When cutting narrower widths out of a bolt, it can be readily seen the machine will save proportionately more.

Taking into consideration the amount of waste which was made with the old method of cutting and which is eliminated by the use of this machine, undoubtedly it is to the interest of every manufacturer to investigate and find out full particulars regarding these claims.

This machine does not require a skilled operator. For setting the machine up for different widths there are gauges with same, so almost any boy can operate the machine. It is impossible for it to cut anything different from the gauges made. The manufacturer who investigates the matter will find at times that the boy or man who cuts the facings and drawer bands, cuts them too wide, or too narrow, thereby making considerable trouble for the operator and many times wasting the cloth. There are only *a few manufacturers who ever stop at the waste-box* to find out how much waste is being made. This is the reason that the same method has been used ever since the existance of underwear mills, and they still feel it is necessary to make all of this waste. It would be time well spent for the manufacturer to go into his trimming department and find out



Our Guarantee



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We guarantee the most modern, powerful, economical and rapid presses known.

We guarantee the best workmanship and material, backed by over 25 years' experience.

The best is always the cheapest in the end.

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DRIVING rain simply *cannot* force its way past those three corrugations on the overlap that serve as storm-barriers on

CORTRIGHT Metal Shingles

"The Permanent Roofing"

The four styles in which they are made give a "harmony assortment" equally suitable for operatives' cottages or more elaborate dwellings. CORTRIGHT Metal Shingles are fire-proof, wear-proof—"last as long as the building and never need repairs."

A postcard will bring our free book. "Concerning That Roof."

Cortright Metal Roofing Co.

PHILADELPHIA CHICAGO

what is being done, and then investigate this machine. The time has come when the old methods must be discarded and up-to-date methods adopted in order to meet competition and tariff reduction.

The "20th Century" cloth cutting, folding and winding machine is manufactured by J. A. FIRSCHING, 50 John Street, Utica, N. Y., who would be pleased to give any information a manufacturer may desire regarding the machine.

THE FARBENFABRIKEN OF ELBERFELD COMPANY, announce that they have sold their business and good will to THE BAYER COMPANY, INC., which will hereafter handle the products formerly sold by them. This transfer took place on June 14.

THE BAYER COMPANY, INC., further announce that in addition to the good will of the above named company, that they have acquired the factory of the Hudson River Aniline Color Works. They will operate this plant and sell its products. They will also be the distributors in the United States and Canada of the colors and pharmaceutical products manufactured by the Farbenfabriken vorm. Friedr. Bayer & Co., of Leverkusen, Germany.

In case there is any difficulty with sizing or finishing, or when some improvement in this respect seems desirable, THE ARABOL MFG. CO., 100 William street, New York, are the people to go to for help. Scientific specialization, long and extended experience, modern facilities in factory and laboratory enable them to meet any conditions. They are continually adding to the staples that have made them popular with the textile trade.

PAINT EFFICIENCY.

That "nothing succeeds like success" is an old but true saying. For many years mill architects, engineers and factory managers have been looking for a successful white paint; one that would stay white. The advent of "Rice's Mill White" into this field has been often mentioned in these columns. A recent letter from the manufacturers of this paint, the U. S. GUTTA PERCHA PAINT CO., of Providence, R. I., indicates that their success is of the continuous performance variety, as during the month of June, besides the usual and regular orders from satisfied customers, they have closed contracts for the entire painting of two of the largest textile mills at present under construction. The J. W. Bishop Co., builders of the Ludlow Mfg. Associates' new plant at Ludlow, Mass., recently placed an order for over two carloads of Rice's Mill White and later in the same week T. S. Thompson & Bros., contractors for the new Dan River Mills at Danville, Va., purchased some ninety barrels of Rice's Mill White and Rice's Reinforced outside paint. When it is considered that these purchases were made as the result of actual tests and on a basis of quality only, nothing further need be said.

FARBENFABRIKEN OF ELBERFELD CO., 117 Hudson St., New York City, are sending the following color cards to the trade: Acid Anthracene Brown P G; Sulphon Acid Black, N B Extra; and Sulphon Acid Black N2B Extra; also Benzo, Fast Blue F F G L. These color cards may be had by interested parties on request.

MASON MACHINE WORKS CHANGE LOCATION OF SOUTHERN OFFICE.

Announcement has been made of the transfer of the Southern office of the Mason Machine Works, manufacturers of all sorts of textile machinery, with headquarters in Taunton, Mass., from Charlotte to Greenville, S. C. Edwin Howard, Southern Agent, has recently leased elegant quarters on the ground floor of the New Masonic building. The transfer will be effected very soon.

The Southern office of the Mason Machine Works has been in Charlotte for the past 11 years, during which time Mr. Howard has been in charge. The reason announced for moving its Southern office to Greenville is because of that point's greater proximity to the textile center of the trade in the South. An additional reason is the fact that there are over 250,000 spindles of the Mason-make within the city of Greenville and many more closely adjacent thereto. It will bring the office also in closer touch with the big textile concerns of that city and section. The fact it well known that within a radius of 75 miles of Greenville thre are 3,250,000 spindles. There are 41 mill presidents residing in that city and the purchasing departments of 48 big mills are located there.

Conditions in the textile machinery trade have changed wonderfully within the last 10 or 15 years. Previously the mill owners, when they came to buy machinery, went to the textile centers and there made their purchass. Now the machinery agents hunt up the mill men and the sales are made at the offices of the mills themselves.

From the Mason Machine Works viewpoint, Greenville is in the center of its largest interests and it is also a great general textile center and hence the transfer.

The increase in our exports to the Orient occurs chiefly in the trade with Japan, the Philippine Islands, and India. To China there was a slight reduction in exports during the calendar year, due to a decline in the quantity of illuminating oil and cotton goods exported to that country in the latter part of 1912, compared with the corresponding period of 1911. To Japan the increase of 14 million dollars in exports chiefly occurred in raw cotton, though flour also shows an increase of about 1½ million dollars. To the Philippine Islands there was a marked increase in exports, the total in 1912 being 25 million dollars in value, against 10 million in 1908, the year prior to the enactment of the law which provides for free interchange of merchandise between those islands and the United States. Both exports to and imports from the Philippine Islands have a little more than doubled during the period in question, imports from the islands in 1912 amounting to 22 million dollars, against a little more than 9 million in 1908, and exports thereto, as above indicated, 25 million dollars in 1912, against practically 10 million dollars in 1908.

BERLIN ANILINE WORKS, 215 Water street, New York City, are sending to the trade a color card of their Solamine Red 8 B L. This is a substantive cotton dye distinguished by its extraordinary fastness to light. This color card contains besides the samples dyed with this dye, directions for dyeing various kinds of fibers.

MILL NEWS

Notices of mill projects, additions or lmprovements are solicited for this department

ALABAMA.

SYLACAUGA. Construction is progressing on the Eva Jane Mill at Sylacauga and the owners expect to complete their big plant by October next.

GEORGIA.

AUGUSTA. The Riverside Mill is to double the capacity of its bagging department. A $17,000 building is to be erected and new machinery installed.

COLUMBUS. The additional machinery mentioned recently as having been ordered by the Muscogee Mfg. Co., has been received and erected.

LAGRANGE. Six operatives' cottages have just been completed at the LaGrange Cotton Mills. These mills are being rapidly improved and brought up to date under the careful supervision of M. E. Stevens.

WEST POINT. The Lanett Cotton Mill will soon have the entire new equipment of machinery recently ordered in operation This includes 25,000 spindles with some other machinery.

MASSACHUSETTS.

SPRINGFIELD. Work is progressing rapidly on the building of new factory building for the Potter Knitting Co.

NORTH CAROLINA.

ROANOKE RAPIDS. The Roanoke Mills are installing 256 Draper looms and some napping machines, according to local report.

LILEDOUN. The Watts Mfg. Co. have decided to increase their equipment by 6,000 spindles. This order has been placed with J. H. Mayes of Charlotte, who will also furnish the accompanying machinery.

GREENSBORO. The new dyeing and finishing plant which was recently referred to as locating at Greensboro, is being rapidly completed. The Proximity Co. expect to secure a daily capacity of approximately 100,000 yards of finished product when the plant is completed. It will employ about 200 operatives.

CUMBERLAND. The Necronsett Mills have permanently organized and have taken over the plant heretofore owned and operated by J. Frederick Houston & Co., of Philadelphia. The new company's officers are: president, J. Frederick Houston; vice-president and general manager, Dexter Stephens; secretary and treasurer, Arthur H. Heise; and superintendent, C. Enos Bean. Under Mr. Bean's careful management the success of this plant is now assured.

GREENSBORO. The Pomona Mills are installing additional machinery recently contracted for. This includes about 5,000 spindles with the accompanying machinery.

HICKORY. The Best Knitting Mills organized for establishing a plant and equipment is now being installed at this place. The daily capacity will be 150,000 pairs of hosiery.

PENNSYLVANIA.

CARBONDALE. The Carbondale Knitting Mills are planning to erect an addition to their plant twice the size of its present building.

WEST BETHLEHEM. The Central Knitting Co., organized by E. S. Buckman and others, expect to start a factory at this place.

SOUTH CAROLINA.

ANDERSON. The addition to the Coneross Yarn Mills was recently put into operation. This nearly doubles the capacity of the mill.

KERSHAW. A new $200,000 cotton mill at Kershaw has been completed. It will be opened with a new crop of cotton as soon as it comes on the market.

YORKVILLE. The addition to Ancona Mills which is owned by J. W. Cannon & Son, will be 73 x 300 feet. It is to be driven by electricity.

TEXAS.

DALLAS. The Dallas Waste Mills of this place has under consideration, plans for the manufacture of cotton bagging. V. H. Thomas is the man behind the proposition.

VIRGINIA.

NORFOLK. Contract has been let and work of construction will soon be under way on the plant for the manufacture of paper boxes used for packing the hosiery output of Chesapeake Knitting Mills, at Norfolk, Va.

WASHINGTON.

SEATTLE. The Octonek Knitting Co. recently incorporated to erect a plant at this place for the manufacture of sweaters.

Scientific
Mining
Methods

Unequaled
Transportation
Facilities

CLINCHFIELD SERVICE

"Never Short of Cars"

Watchful
Attention to
Deliveries

Expert
Boiler-room
Advice

Mammoth Storage Plant, centrally located

SCOTCH SIZE OR KLEISTER

This is an old preparation, well known to the majority of Cotton Manufacturers, on account of the general satisfaction it has always given. A binder for both fine and coarse counts as it combines readily with any starches, lays the surface fibre and holds the size well on the yarn. Manufacturers of exports and denims find it specially valuable, as it reduces shedding and loom waste to a minimum. Specially valuable where drop wires are in use. Scotch Size should be used in combination with Amid Tallow or Arabol Soluble Softening Oil.

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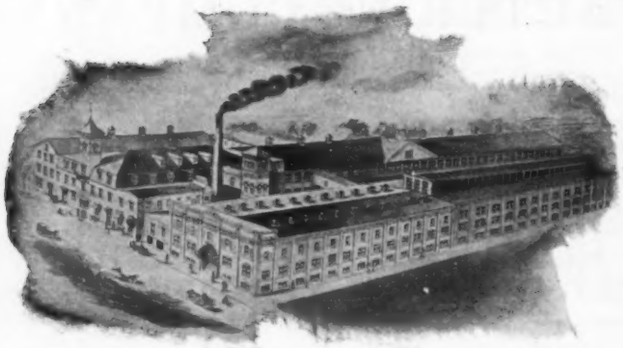

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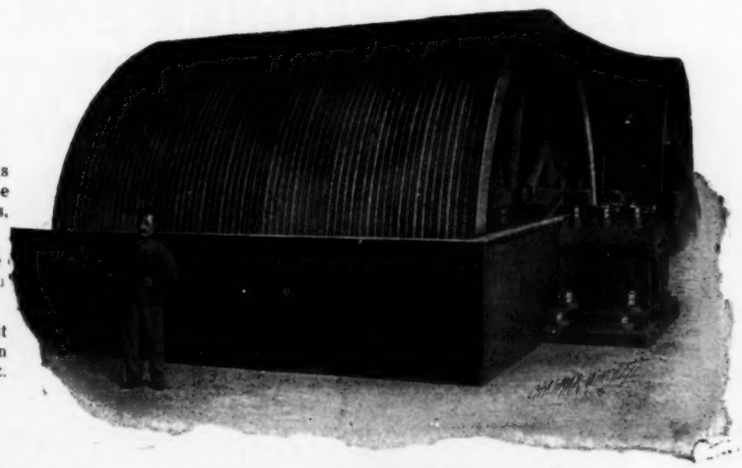

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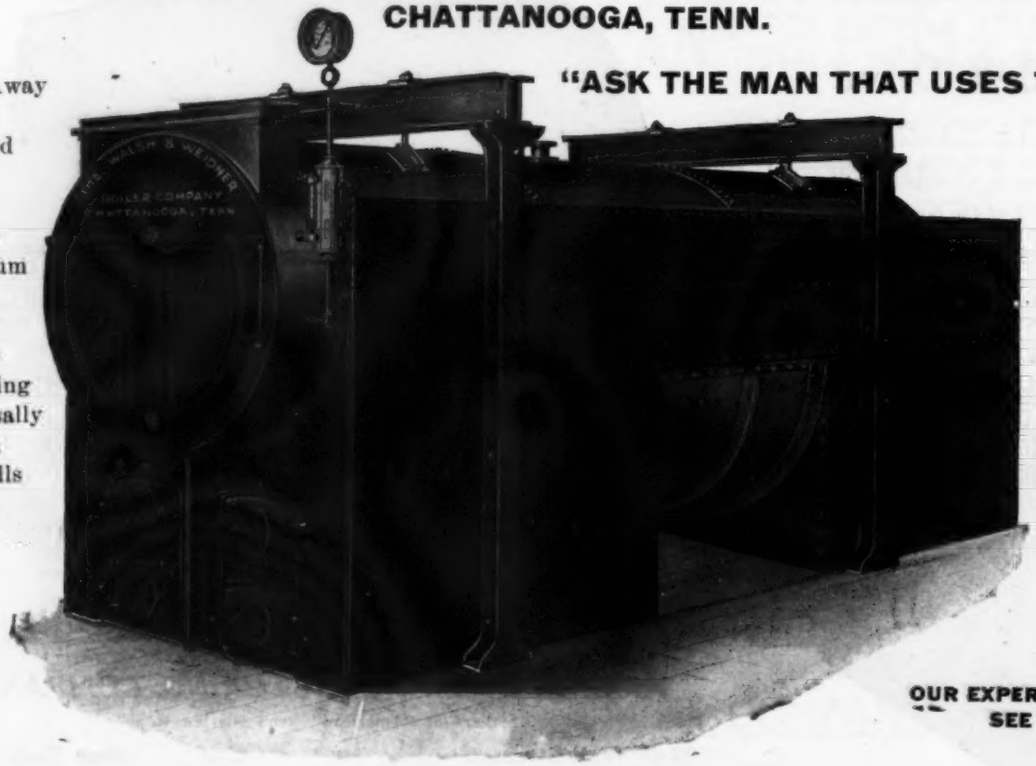

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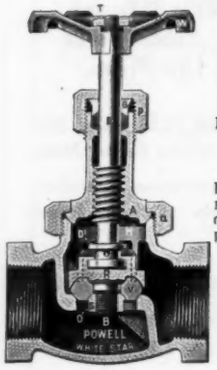

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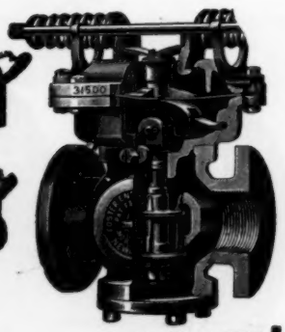

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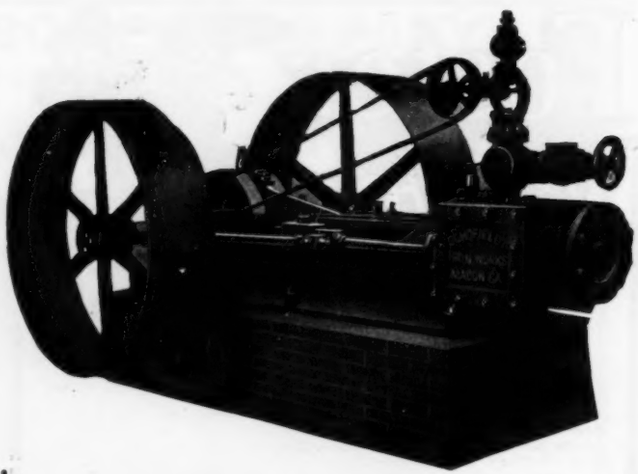

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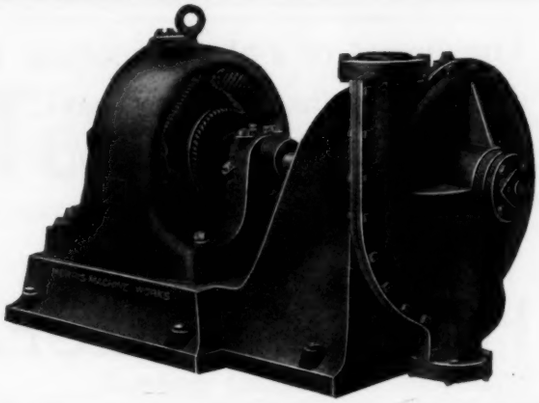

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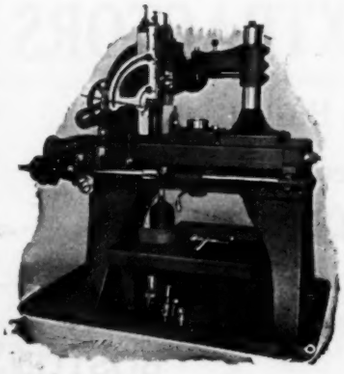

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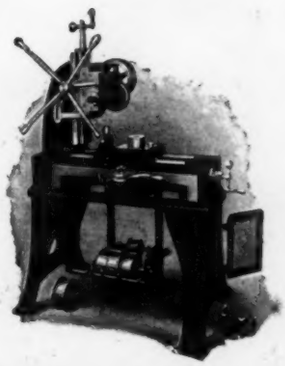

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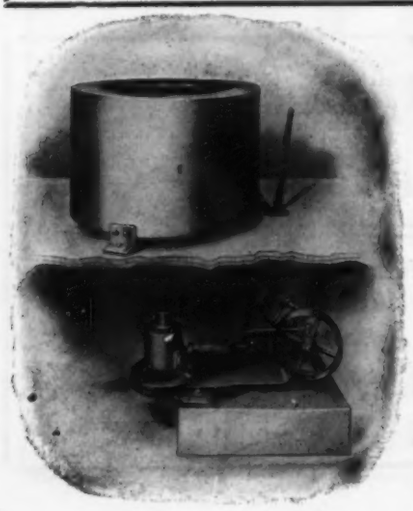

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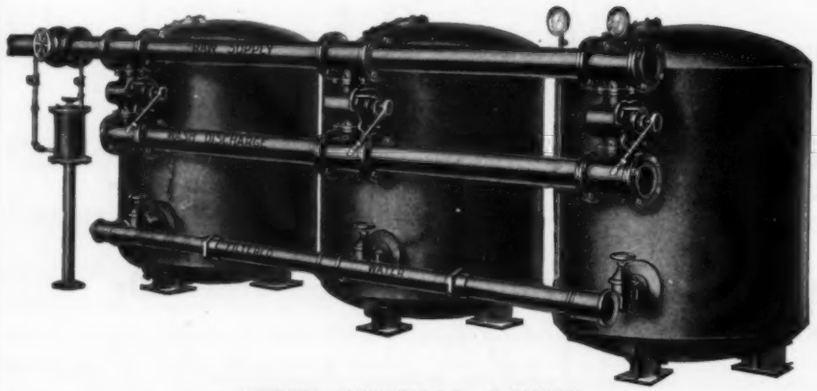

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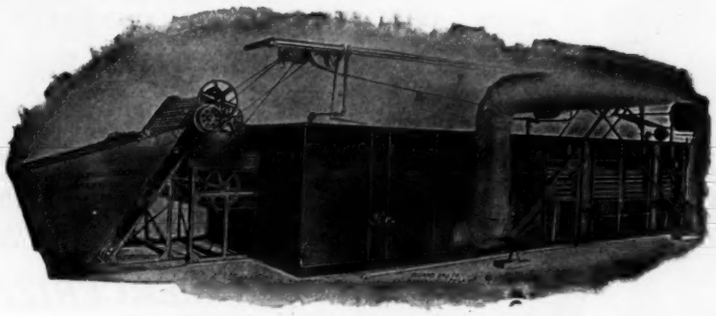

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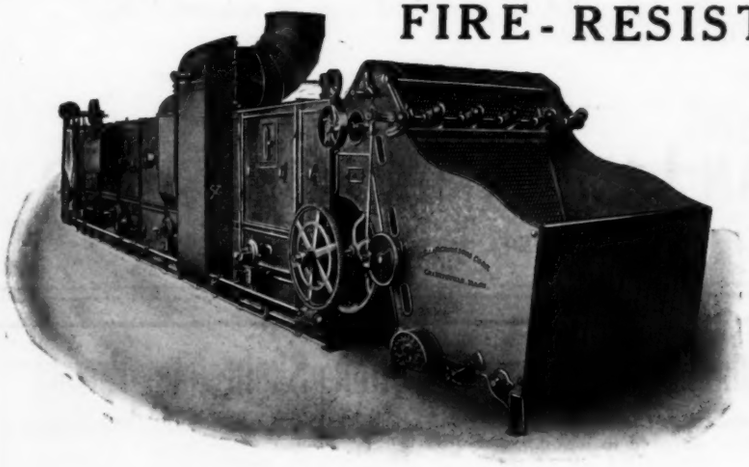

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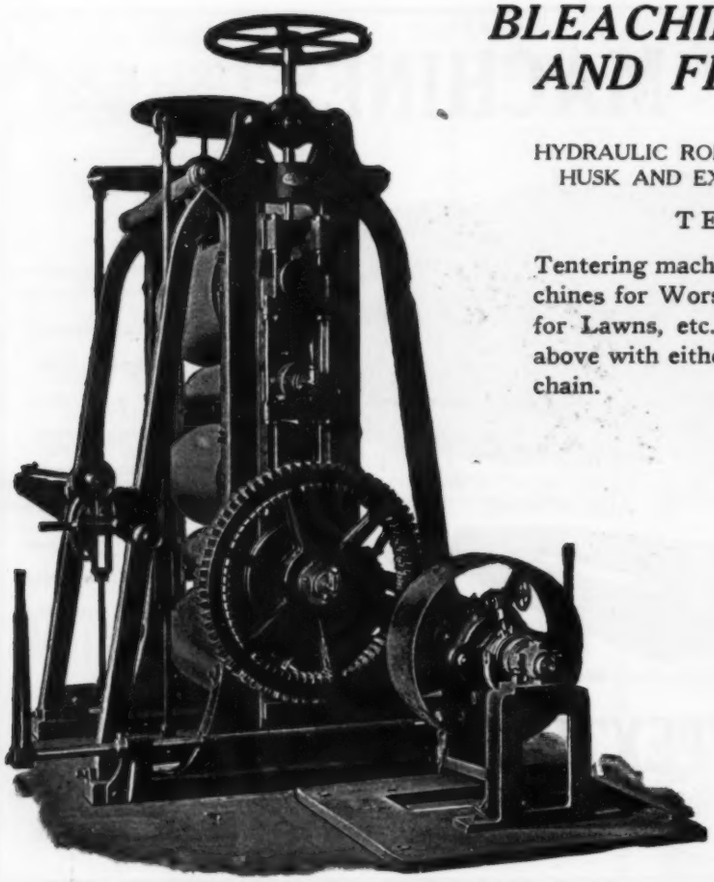

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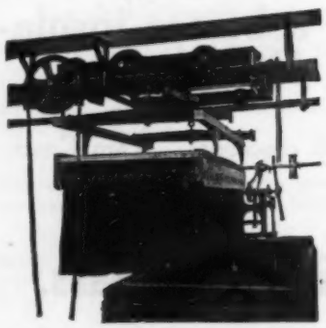

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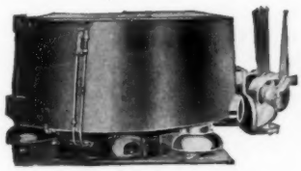

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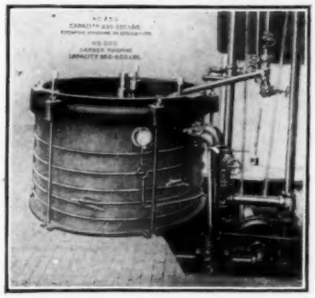

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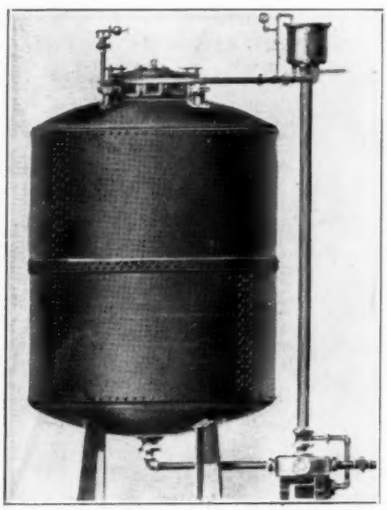

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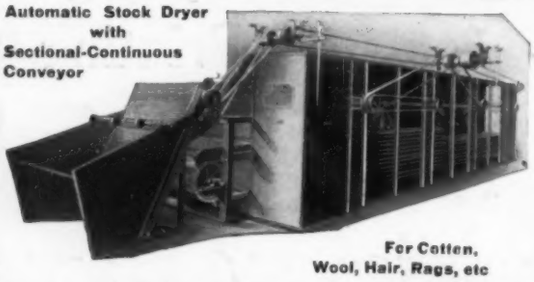

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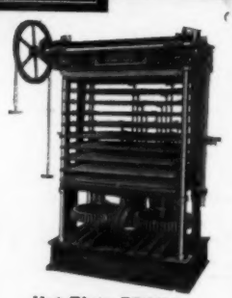

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